FEBRUARY, 1942

Rock Products

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TECHNICAL DIVISION

B & W PULVERIZERS

Superior performance in Direct Firing

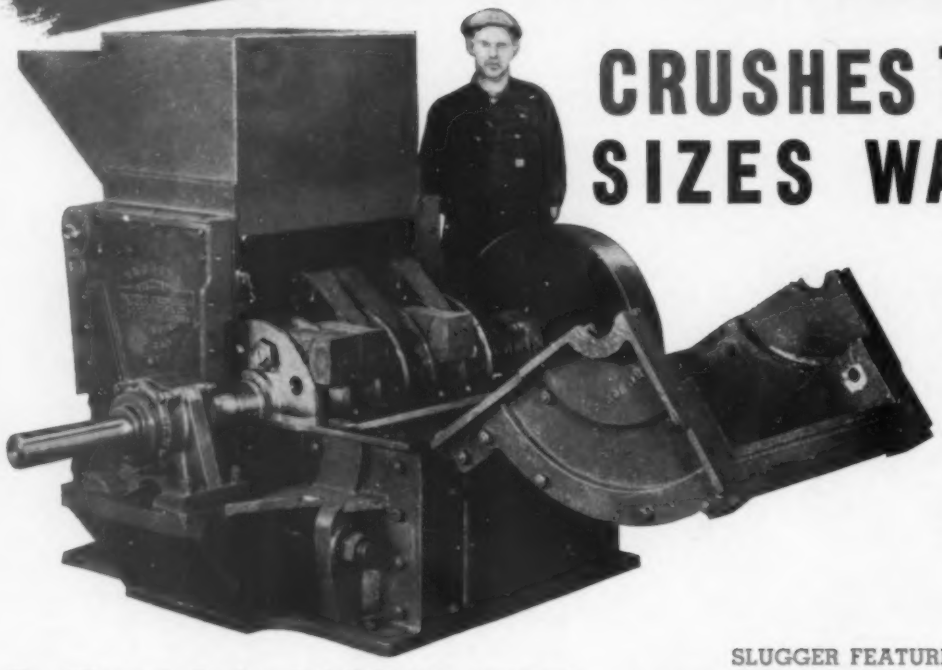
Low operating costs and high availability make B&W Pulverizers, Type E, the logical choice for modern kiln-firing.

C-47

THE BABCOCK & WILCOX CO. . . . 85 LIBERTY STREET, NEW YORK, N. Y.

BABCOCK & WILCOX

ONE OPERATION!



CRUSHES TO THE SIZES WANTED

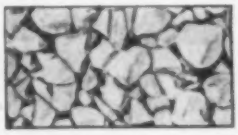
REDUCES "ONE-MAN" SIZE STONE TO 1¼", ¾" OR AGSTONE IN ONE OPERATION AT THE RATE OF 6 TO 300 TONS PER HOUR

The "Slugger" Crusher and Pulverizer represents the most advanced type of crushing equipment on the market today. It is now possible to crush hand loaded rock, stone weighing from 75 to 100 pounds to 1¼", ¾" or agricultural limestone in One Operation. This not only eliminates sledging but also does away with the unnecessary expense of a primary crusher. Larger Williams crushers handle power shovel loaded stone.

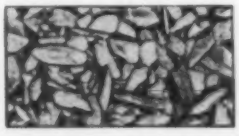
SLUGGER FEATURES INCLUDE

- **MANGANESE STEEL HAMMERS.** Heavy duty slug end hammers are standard equipment in the "Slugger".
- **HAMMER ADJUSTMENTS OVERCOME WEAR.** Discs are arranged so that the hammers can be set out as they wear on the end.
- **MANGANESE STEEL ADJUSTABLE BREAKER PLATE.** Adjustable towards the hammers.
- **ELECTRIC STEEL FRONT END.** The part which holds the breaker plate is electric steel cast—3½ times stronger than cast iron.
- **COVER AND SIDE LINERS 1" THICK.** Manganese steel liners.
- **SEVEN SIZES.** 30 to 150 horsepower, stationary or portable models.

COMPARE THE PRODUCT



The above photo shows rock crushed with the "Slugger". Note the desirable cubular shape of the stone.



The photo at right shows rock not crushed with a Williams—note the slivers—both samples are from the same ledge.

WILLIAMS FINE GRINDING AND AIR SEPARATING EQUIPMENT

ROLLER MILLS WITH AIR SEPARATION

Whatever the fine grinding job—Limestone, Lime, Coal, Talc, Gypsum or similar material there is a Williams Roller Mill to fit your particular requirements from 100 to 400 mesh grinding.

IMPACT MILLS WITH AIR SEPARATION

For grinding hydrated lime to 98 per cent 325 mesh, clays, filter press cake—Dries and Grinds simultaneously.

MECHANICAL AIR SEPARATORS

For classifying material that has already been ground or for taking the fines out of any dry material that it is desirable to classify. Usually operates in closed circuit with a pulverizer and it may be used in this way with almost any type mill.

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Williams

PATENT CRUSHERS GRINDERS SHREDDERS

VETERAN

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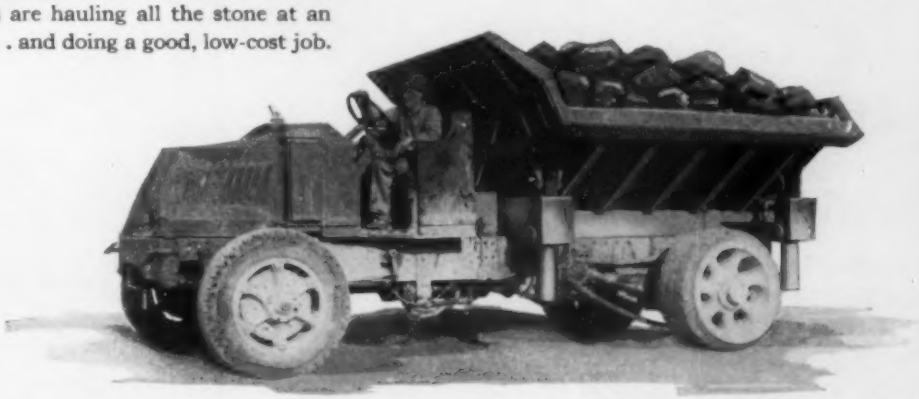
There's A Long Haul Left in the veteran truck and its veteran tires at your right. Easton Engineers called them fit for duty until new equipment is available. With new 6-8 ton Easton Phoenix hydraulic side-dump bodies two of these veterans are hauling all the stone at an active plant . . . and doing a good, low-cost job.

At the same time, far-sighted planning by the operator has prepared this quarry for a future changeover to modern Easton Semi-Trailers, with modern tractors and modern tires.



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CARS · SEMI-TRAILERS · TRUCK BODIES · FOR QUARRY SERVICE

EASTON CAR & CONSTRUCTION CO.
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So that you may haul bigger payloads of stone today—and every day—Easton Engineers are at your service. Several new installations of Easton Semi-Trailer Haulage, Easton Cars, and Easton Truck Bodies, will be made this year. But if you have to wait, remember that the low cost, the high speed, and the big payloads in Easton quarry haulage equipment are **WORTH WAITING FOR.**

FEB 14 1942

Rock Products

Recognized the World Over as the Leader in Its Field

With which have been consolidated the journals *Cement and Engineering News* (founded 1896) and *Concrete Products* (established 1918)

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WHEN Mitchell & Hodges, of Cedartown, Ga., took up the matter of power for their Black Diamond shaker, feeder, two washer logs and 50-foot conveyor belt handling 600 tons of material per day, a "Caterpillar" Diesel D13000 Engine was their choice.

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Long life, ample power for big production, and thorough dependability for long stretches of operation are "Caterpillar" Diesel qualities which have been proved in thousands of installations. But equally important among the things you look for in crusher, shaker, shovel or compressor power is over-all *operating economy.*

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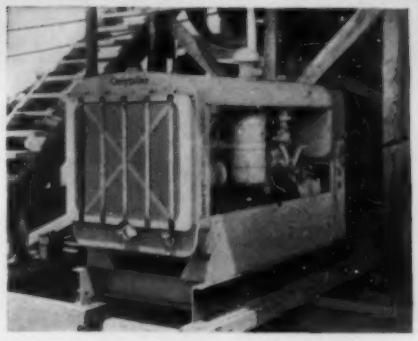

• This is the "Caterpillar" Diesel D13000 Engine which powers the Mitchell & Hodges plant. Another "Caterpillar" Diesel, a D4600, powers a Link-Belt Speeder shovel which excavates and loads material to be hauled to the hopper.

NOTE—"Caterpillar" Diesels are further ideally suited for mine, quarry and gravel-pit work because of their *complete dirt protection.* It includes heavy-duty oil-bath air cleaners; combination absorbent and metal-edge type oil filters; completely enclosed valve-operating mechanism and flyball governor; absorbent type fuel filters; metal-screened crankcase breather.

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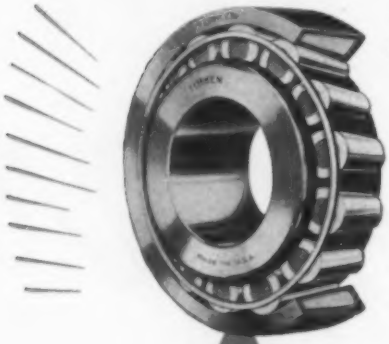

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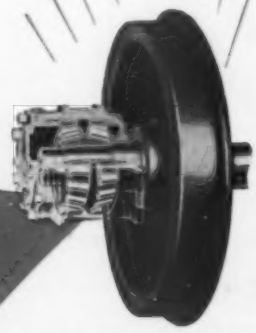

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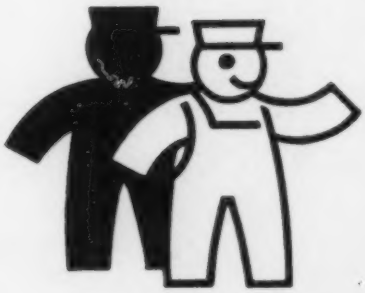
THE TIMKEN ROLLER BEARING COMPANY, CANTON, OHIO

Meet "DOUBLE EDDY"*



*Symbolizing the harnessed power of the double eddy current—an exclusive advantage of the Buell (van Tongeren) Dust Recovery System.

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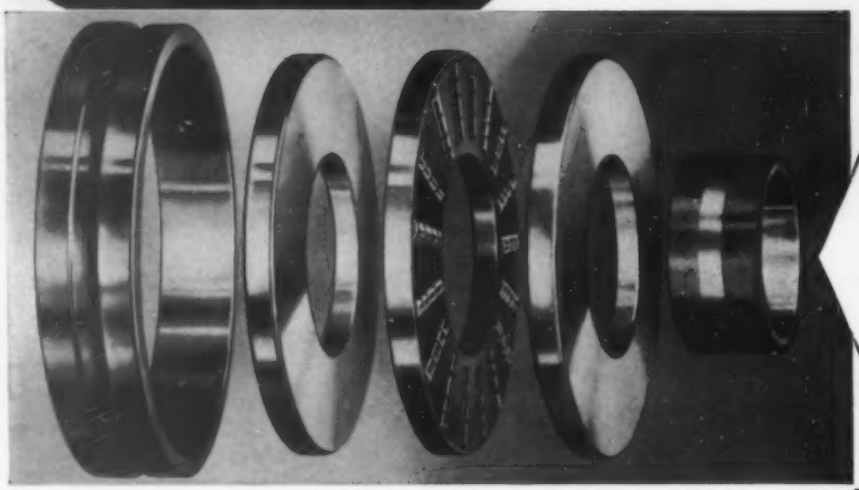
That means solid cylindrical rollers of greater total mass and cross-section area in a given space. It means smaller unit-load per roller . . . longer wear . . . increased load capacity . . . and reduced maintenance attention. It assures true rolling . . . no pinching or wedging . . . less sliding friction . . . and lower torque. It permits change-over from other kinds of bearings to Rollways of *higher load capacities* without increasing boundary dimensions.



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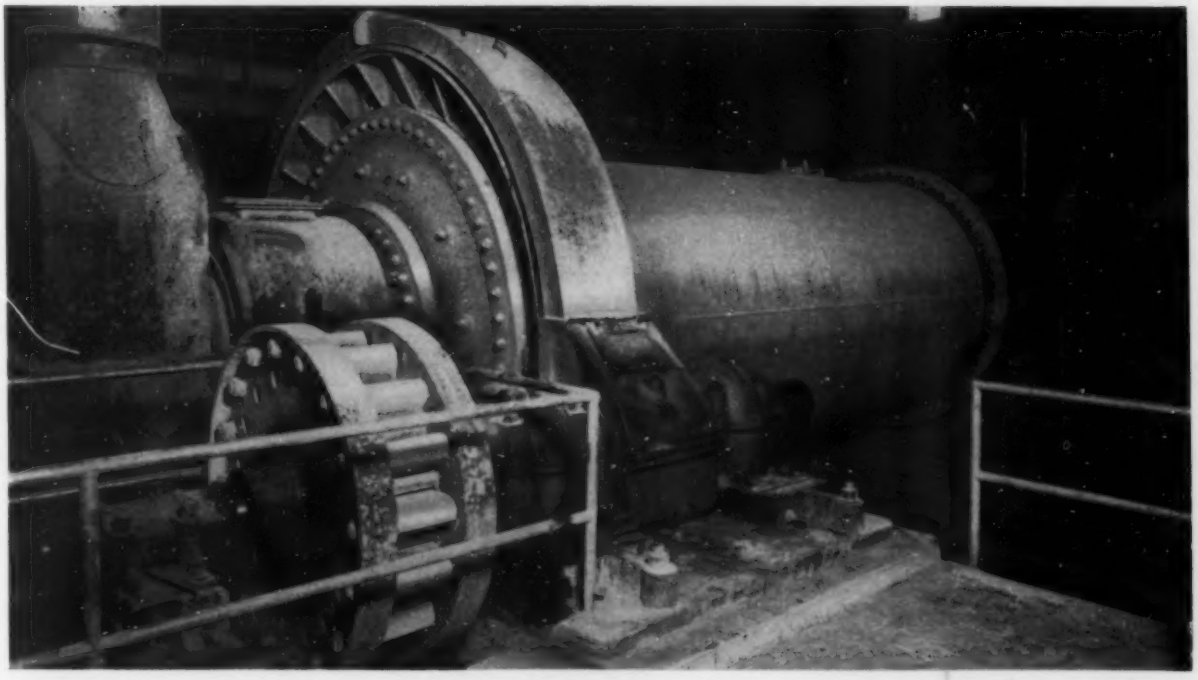

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170,000 Tons in 4½ Months

TELSMITH PLANT

speeds construction of Army Ordnance Works

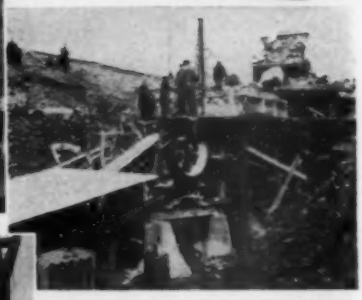
★ For the new powder bag-loading plant at the New River Ordnance Works near Radford, Va. 300,000 tons or more crushed aggregate will be required. To supply it the Pendleton Construction Corp. of Wytheville, Va. with the co-operation of Telsmith engineers built a new crushing plant near Dublin, Va. It is Telsmith equipped *throughout!*

Actual crushing began March 13, 1941, and by the end of July, 170,000 tons of aggregate had been turned out. The capacity naturally varies—from 150 tons to 100 tons per hour—depending upon the sizes produced. Six different sizes of finished products can be made.

The plant amply demonstrates *Telsmith planned production.* Properly co-ordinated and balanced, all units are working smoothly —giving flexibility as to sizes, and dependability as to quantity and quality of product. That's as typically Telsmith as the low cost per ton.

Each of the three Telsmith Crushers (Jaw, Gyrasphere, Roll) is driven by its own Diesel. A Diesel-electric generator supplies current for the individual electric motor drives on the Telsmith Apron Feeder, the two Telsmith screens and the four Telsmith-Barber-Greene Steel Frame Belt Conveyors.

For details on Planned Plant Production by Telsmith—get *Bulletin Q-11.*



Under hopper, 36" x 12' Telsmith Heavy Duty Apron Feeder delivers to 24 x 36 Telsmith Roller Bearing Jaw Crusher.

Telsmith 4'x12' two-deck Pulsator over small loading bin. Rejects from the top deck are recrushed by the Gyrasphere.

No. 48 Telsmith Gyrasphere, in closed circuit with 3-deck screen, recrushes the top deck rejects.

4'x12' Telsmith 3-deck Pulsator over main storage bins, grades stone into three sizes.

Surplus in main storage bin, of any size, is crushed to smaller sizes by 30x18 Telsmith Roll Crusher.

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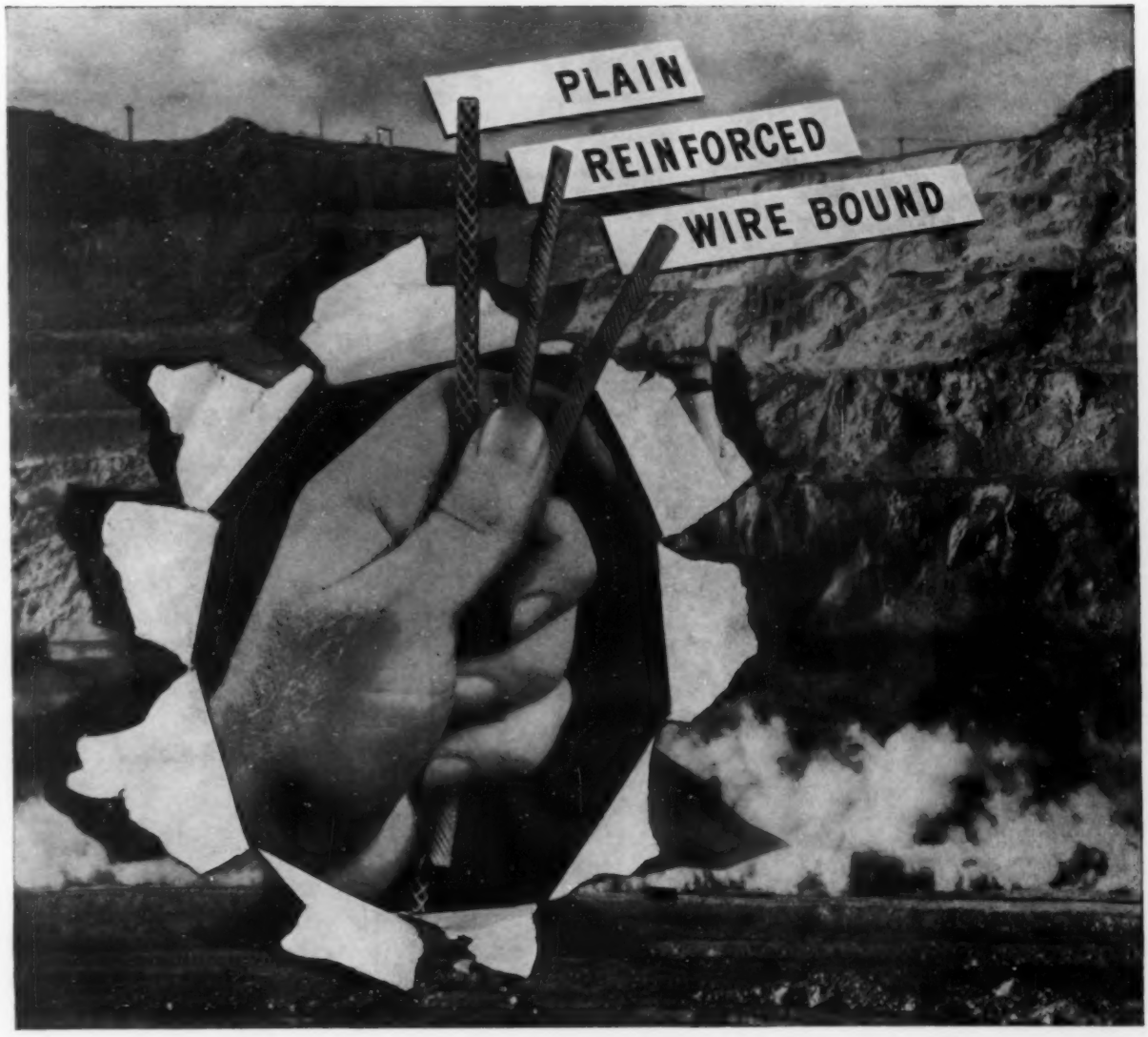

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PB-41

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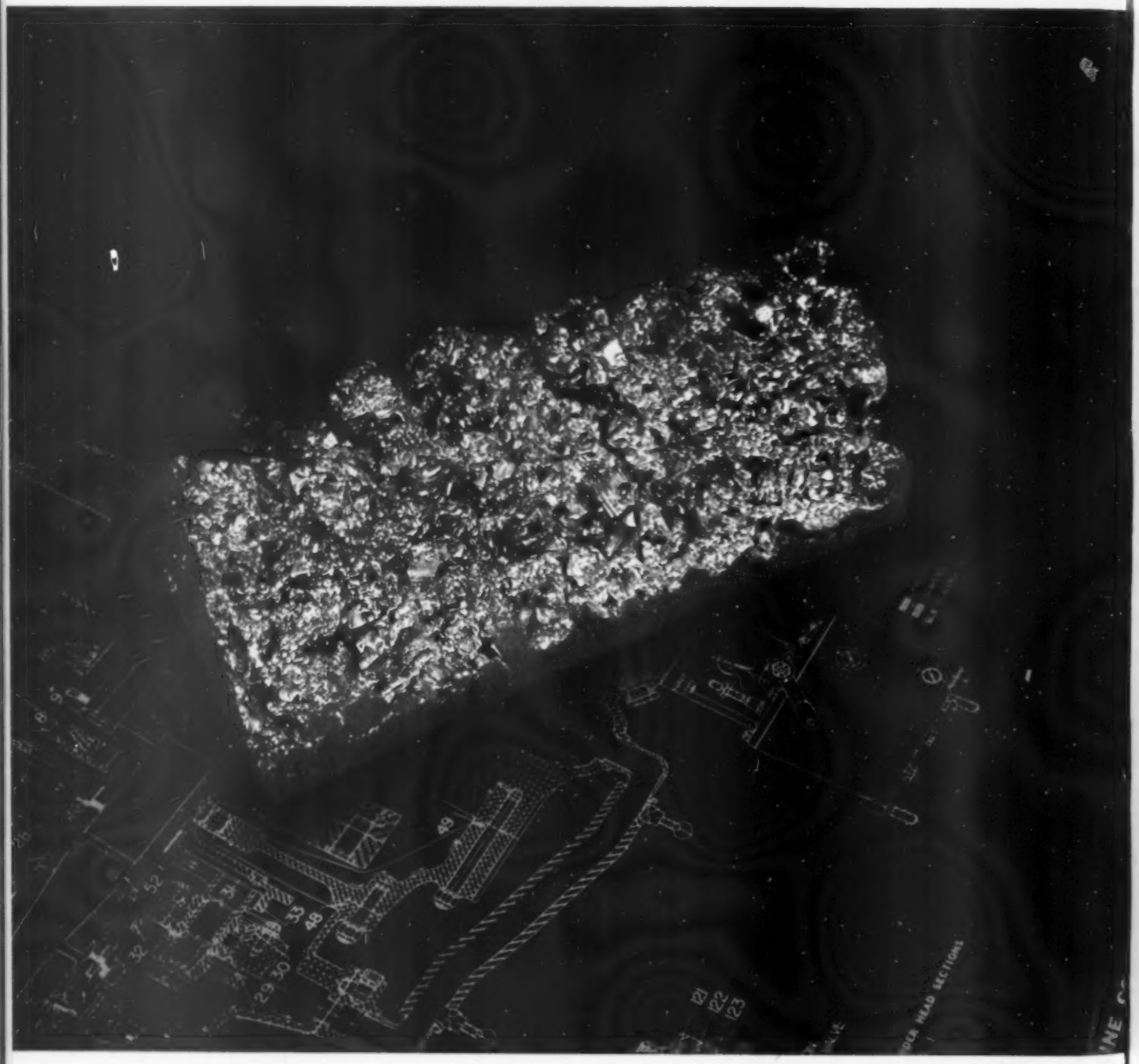

American Cyanamid Company

Declaration of Independence

This block of metallic magnesium from a new American plant symbolizes America's expanding production of strategic metals and its growing independence from sources which can no longer be counted upon to supply the increasing needs of American industry. Even before this page is printed, magnesium metal from this new source may be winging its way over a trackless ocean as a vital part of a Flying Fortress!

Magnesium is only one of many strategic metals which must be made available in undreamed of quantities. Not only metals such as Tin, Chromium and Tungsten not previously produced in quantity by American concentrators, but also American production of non-metallics like Fluorite, Barytes, Limestone, Refractory Materials, Mercury, Mica, Graphite and Garnet must be increased quickly and to unprecedented quantities. This can only be done by using the most efficient modern concentration processes.

Most efficient within its field of application is Heavy-Media Separation (Sink-Float), alone or in combination with froth flotation. When designed from experience gained on large-scale operations and after adequate test work in a well-equipped ore-dressing laboratory, Heavy-Media Separation plants can be built quickly and inexpensively. Being almost entirely assembled from standard units of milling equipment, they can be put into commercial operation with a minimum of lost-time and with operating costs lower than any other modern concentrating process. Particularly because a wide variety of heavy media—both ferrous and non-ferrous—can be used. Heavy-Media Separation has great scope and flexibility of application.

The addition of Heavy-Media Separation to an existing flow scheme offers a proven, low-cost method of pre-concentration of mill feed to produce larger metal-output from existing concentration equipment, or, an economic process for concentrating sub-ores and waste products hitherto regarded as too low-grade for treatment. In addition, Heavy-Media Separation may produce savings in mining costs by permitting less selective and lower cost mining methods. Laboratory and mill results indicate that Heavy-Media Separation may have wide applicability in producing directly a marketable concentrate. This should be particularly interesting to producers of strategic non-metallics.

To determine the economic application of Heavy-Media Separation, froth flotation or combinations of these processes, Cyanamid offers the entire mining industry the services of the expanded Cyanamid Ore Dressing Laboratory, the experience of Cyanamid Field Engineers and its practical operating background gained in treating millions of tons of diverse ores by these processes.

A new edition of Ore Dressing Notes—now in preparation—describes the Heavy-Media Separation Processes offered by Cyanamid. A copy will be sent upon request.

30 Rockefeller Plaza, New York, N. Y.

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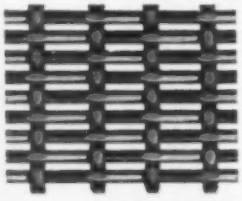
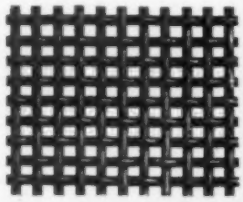
endure vibration better —

resist fatigue to the utmost



REK-TANG
long-slot
weave



DOUBLE-CRIMP
square-mesh
weave

The background at top of page shows the "Perfect" Double-Crimp Weave.

The small cuts in the center panel compare REK-TANG Weave and Double-Crimp Weave.

The border at foot of page shows "Perfect" Double-Crimp Steel Wire Cloth which has been hot-dip galvanized after weaving.

Samples on request.

The LUDLOW-SAYLOR WIRE COMPANY
SAINT LOUIS

PIONEER
Foto Facts
No. 14

WITH INCREASED DEMANDS FOR DEFENSE PROJECTS, PAUL FRANK REQUIRED MORE PRODUCTION AND BETTER CONTROL OF QUANTITIES OF EACH SIZE.

300,000 TONS CRUSHED ROCK IN ONE SEASON

PAUL FRANK
GENERAL CONTRACTOR
PORTER VERNON, INDIANA

Pioneer Engineering Works, Inc.
1515 Central Ave.,
Minneapolis, Minn.

Gentlemen:

In January, 1939, I started re-modeling my plant and installing Pioneer equipment. Since that time I have installed new Pioneer Crushers, Screens and Conveyors and replaced every old Crusher and Screen with Pioneer equipment. My plant is now 100% Pioneer equipped.

Thanks to Pioneer, I was ready to take care of the increased demands for crushed rock for Defense Projects. I have produced over 300,000 tons of rock this year without shut-downs, delays, or trouble of any kind.

I am glad to recommend Pioneer Crushers, Screens, Conveyors and Quarry Equipment to the commercial producer.

Yours very truly,
Paul Frank
Paul Frank

Here's how Paul Frank, large commercial quarry operator at North Vernon, Indiana, again stepped up his output of crushed rock and agricultural limestone.

He installed a Pioneer 30"x42" Primary Jaw Crusher, 3 new Pioneer Vibrating Screens and another Pioneer 40"x22" Roll Crusher.

A 100% Pioneer equipped plant . . . and read what Paul Frank has to say about it.

PIONEER ENGINEERING WORKS
1515 CENTRAL AVENUE · MINNEAPOLIS, U. S. A.

Speeding Victory

Barber-Greene

THESE machines are the products of free enterprise, developed in times of peace for normal functions. They are typical of the many ingenious results of the open competition of a democratic system. Now these very machines are working to defend the system that made them possible.

There is much more to defense than munitions . . . the building of camps, airports, roads, igloos

BARBER-GREENE COMPANY

B-G FINISHER

B-G PORTABLE CONVEYOR

B-G SNOW LOADER

B-G TRAVEL PLANT

B-G "GOOSENECK" COAL LOADER

B-G CAR UNLOADER

with

- Greenes

– a thousand major products – requiring almost every commodity used in our normal life – now required in a sudden rush of multiplied quantities. The ingenuity and unequalled efficiency of American products combined with the American spirit is responsible for the rapid progress of the defense program – a spirit that is showing the difference between being pushed together, and pulling together.

AURORA, ILLINOIS, U. S. A.

B-G DITCHER

B-G PERMANENT CONVEYORS

B-G BUCKET LOADER

B-G COAL LOADERS

B-G BITUMINOUS CENTRAL PLANT

It Won't Happen Here!

with Universals on the Job

In World War I the A.E.F. spent half its time digging itself out of chuck holes and wallows—hydroplanes could land on airports almost all the time. That was *over there!*

But it won't happen here, thanks to Universal Portable Crushing Plants which are turning out specification chips, aggregates and base course material for hundreds of airports, camps, naval bases, access roads and other defense projects.

Universals are patriotic because they turn out material faster, require fewer repairs, thereby saving strategic materials and they conserve fuel! You can do more for Uncle Sam and do better for yourself with a Universal. Everything for crushing, pulverizing, screening, loading, washing and storage.

UNIVERSAL CRUSHER CO.
617 C Ave. West
Cedar Rapids, Iowa

Triangle Construction Co., Boise, Idaho, chose a Universal Jaw Crusher for their composite plant (on right) to make material for Walla Walla, Wash. airport. Averages 2,000 tons a day.

Below: "Pacemaker" Quarry Plant with "Two-in-One" Rolls makes high yardages of defense material at low cost per yard for Halvorson Bros., Rochester, Minn.

Universals are putting a firm base under Canadian defense, too—a Junior Gravelmaster (above) crowds out airport material for W. B. Uren, Contractor of St. Georges, Ont.

UNIVERSAL

CRUSHERS, PULVERIZERS, COMPLETE PLANTS, SPREADEROLLERS, PORTABLE ASPHALT PLANTS

TOUGH AS A BULLDOG...

supple as a whippet

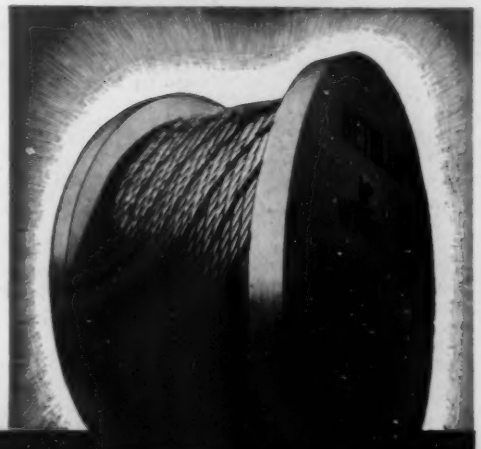
Two unusual qualities are combined in Purple Strand Form-set wire rope: rugged toughness and pliant ease.

Purple Strand is made of the toughest steel used in wire rope—Improved Plow. Then this tough rope is preformed (every strand permanently shaped into its helical position as the rope is being made). As a result, Purple Strand Form-set is relaxed, easy to handle. Broken wires won't wicker. No seizing is necessary when the rope is cut or spliced. Fatigue-resistance is improved. Purple Strand Form-set is our top-notch rope. Try it.

PURPLE STRAND

FORM-SET

WIRE ROPE



BETHLEHEM STEEL

BETHLEHEM STEEL COMPANY

STURTEVANT AIR SEPARATORS

STURTEVANT Air Separators, for finest separation of dry materials, mean bigger profits for more plant operators each year — because they not only increase separation capacity but also reduce the number of units needed. In addition to the cement field, hundreds of STURTEVANTS are helping other non-metallic mineral producers to meet the present strict specifications.

If you want greater Separating Efficiency — it will pay you to investigate the Proven Record of STURTEVANT Air Separators.

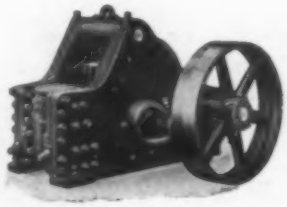
309— SOLD FOR CEMENT ALONE — NOT A SINGLE REJECTION

ALL ON APPROVAL

ENGINEERING FEATURES OF STURTEVANT AIR SEPARATORS are . . . . .

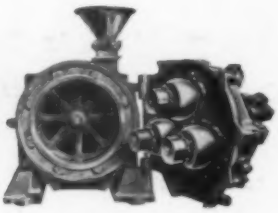
- **Controlled Specific Surface Area.**
- **Lowered Mill and Products Temperatures.**
- **Reduced Production Costs.**
- **Range of Fineness from 40 to 350 Mesh.**
- **Capacities of ¼ Ton to 50 Tons per Hour—Mill Capacity Increased by 25% and in Some Instances by 300%.**
- **Reduced Cost for Power and Upkeep.**
- **Sizes 3′ to 16′.**

The Sturtevant Line-up of other profit producing equipment



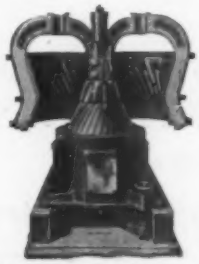
JAW CRUSHERS

for coarse, intermediate and fine reduction of hard or soft substances. Heavy or light duty. Cam and Roller action. Special crushers for Ferro-alloys. Several types, many sizes.



RING-ROLL MILLS

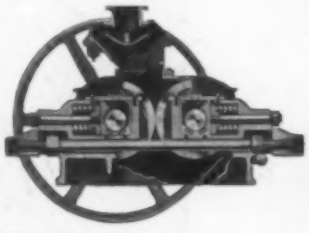
for medium and fine reduction (10 to 200 mesh) hard or soft materials. Very durable, small power. Operate in closed circuit with Screen or Air Separator. Open door accessibility. Many sizes, large or small capacities. No scrapers, plows, pushers, or shields.



ROTARY FINE CRUSHERS

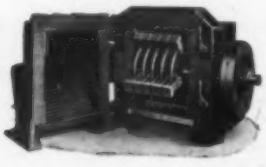
for intermediate and fine reduction. (1" to ¼".) Open door accessibility. Soft or moderately hard materials. Efficient granulators. Excellent preliminary Crushers preceding Pulverizers. Many sizes. Belt or Motor driven.

EVERY piece of Sturtevant equipment is built with the infinite care that has gone into its 58 years of making custom-made machinery. Accessibility to allow for quick, easy, and inexpensive repairs or for clean-outs is carried to the 'nth degree, as in the long run this pays big dividends upon the slight extra cost of construction. That is why practical operators appreciate Sturtevant equipment, and why many will have no other.



CRUSHING ROLLS

for granulation, coarse or fine, hard or soft materials. Precision and automatic adjustments. Crushing shocks balanced. For dry or wet reduction. Sizes 8x5 to 38x20. Roller or Plain bearings. The standard for abrasives.



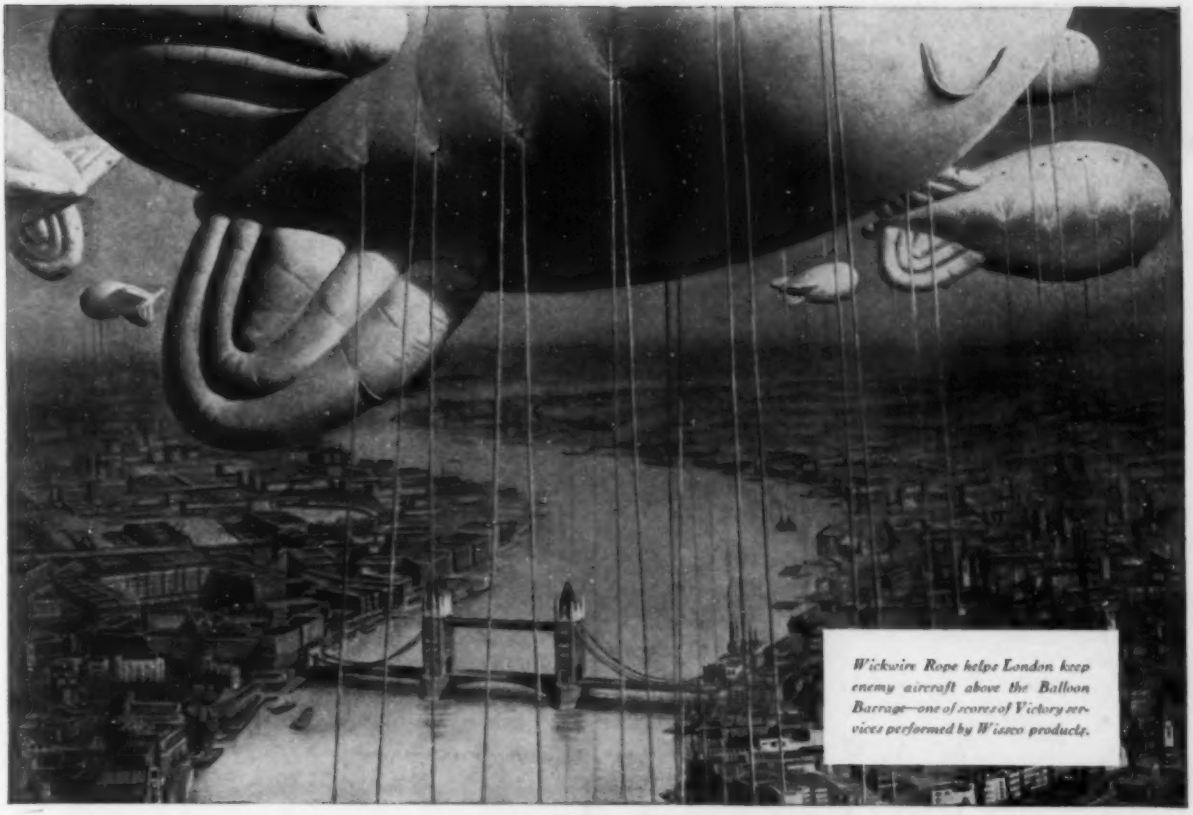
SWING-SLEDGE MILLS

for coarse and medium reduction. (1" to 20 mesh). Open door accessibility. Soft, moderately hard, tough or fibrous substances. Built in several types and many sizes.

MOTO-VIBRO SCREENS

screen anything screenable. Classified vibrations. Unit construction—any capacity. Open door accessibility. Open and closed models with or without feeders. Many types and sizes—range of work ½-in. to 60 mesh.

STURTEVANT MILL CO. HARRISON SQUARE BOSTON, MASS.



Wickwire Rope helps London keep enemy aircraft above the Balloon Barrage—one of scores of Victory services performed by Wissco products.

A Message About Wire Rope

FROM LONDON'S BALLOON BARRAGE!

Here is a vital message written in steel upon the skies over London . . . where a single order for 587 miles of Wickwire Rope now adds its bit in protecting a great city from dive bombers.

Every foot of that wire rope is an eloquent argument in itself, speaking directly to every user of wire rope—whether used for war, or for essential civilian services.

The message is: VICTORY NEEDS *STEEL!* Victory needs night and day all-out efficiency in every industrial operation. Wire rope that fails too soon wastes steel. The time wasted replacing it is a red stop light on Victory.

You can speed Victory by using wire rope of the correct size and type for your service . . . *then by taking proper care of it, so that it lasts.*

The long life of Wickwire Rope begins with skillful production of the metal in our own blast furnaces. It continues through proud care and precision methods in drawing the wire, and laying the rope. Wickwire representatives give expert help in advising on the best type of rope for each use. And after delivery, Wickwire Service in the field continues to work with you, to assure longest life on the job.

• • •

Our authoritative "KNOW YOUR ROPES" manual, on the selection, application and usage of wire rope, has profited more than 25,000 rope users. Ask for your copy today. Write Wickwire Spencer Steel Company, 500 Fifth Avenue, New York, N. Y.

A FOOT OFF may make your rope last longer. Constant bending and unbending around a sheave will finally wear out any rope. A foot off the rope redistributes the wear. This and forty more rope life-savers are pictured and described in our booklet, "Know Your Ropes."

SEND YOUR WIRE ROPE QUESTIONS TO WICKWIRE SPENCER

WICKWIRE SPENCER STEEL COMPANY

WICKWIRE ROPE

Sales Offices and Warehouses: Worcester, New York, Chicago, Buffalo, San Francisco, Los Angeles, Tulsa, Chattanooga, Houston, Abilene, Texas, Seattle. Export Sales Department: New York City

WISSCO PRODUCTS

This Simple Test Shows Why the CONCAVE SIDE Cuts Belt Costs!

What Happens When a V-Belt Bends

FIG. 1

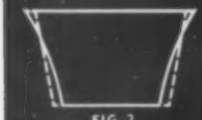


FIG. 2

If you care about belt costs, pick up any V-belt you have handy and make this simple test:—

Bend the V-belt while you grip its sides and you will feel how the belt changes shape. The top, under tension, narrows. The bottom widens. The sides of the belt bulge out. Clearly, if its sides were straight to begin with, the bent belt is forced into a shape that does not fit the sheave groove—as shown in figure 1, on the left.

Now, bend a V-belt built with the patented Concave side. You get the same shape change, but now the new shape exactly fits the sheave groove—as shown in figure 2. There is no side-bulge. Results? (1) Uniform side-wall wear—longer life! (2) The belt gets a full side-width grip on the pulley—carries heavier loads without slippage. This cuts belt costs and saves power.

Only belts built by Gates are built with the Concave side, which is a Gates patent.

THE GATES RUBBER COMPANY

Engineering Offices and Stocks in All Large Industrial Centers

GATES VULCO ROPE DRIVES

Chicago, Ill.
549 West Washington

New York City
215-219 Fourth Avenue

Birmingham, Ala.
405 Liberty National Life Bldg.

Los Angeles, Cal.
2240 East Washington Blvd.

Denver, Colo.
999 South Broadway

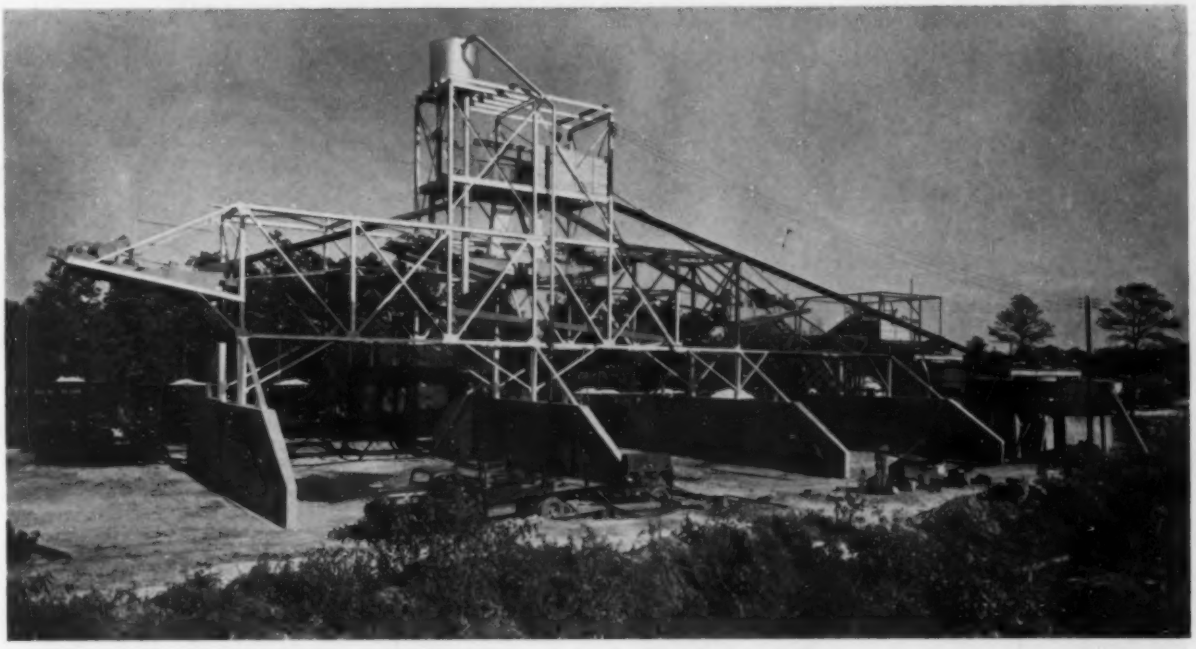
Dallas, Tex.
2213 Griffin Street

Portland, Ore.
333 N. W. 5th Avenue

San Francisco, Cal.
2700 16th Street

High specification sand production

PLUS MAXIMUM FLEXIBILITY AND PRODUCT CONTROL



Whitehead Brothers Company plant, before walls were built, showing the equipment composing the Dorr System.

FOUR STEPS IN THIS DORR SYSTEM

STEP 1
Desilting and Clay Removal in a Dorr Hydroseparator, in background.

STEP 2
Fractionation into 6 Sized Products in a Fahrenwald Sizer, on top of steel structure.

STEP 3
Washing and Grading Products Nos. 1-4 Incl. in four Dorr Classifiers, mounted on steel structure, discharging into four bins below.

STEP 4
Washing and Grading Product No. 5—Fine Core Sand in a Dorr Thickener and a Dorr Classifier in background.

● **This newest Dorr Sand Preparation System of Whitehead Brothers Company at Dividing Creek, N. J., produces 40 to 50 tons an hour of high grade moulding sand. Five washed and closely sized products are made, ranging upwards in size from fine core sand.**

Four steps are taken in sequence as noted at the left. Positive mechanical adjustment is provided at each unit. Result — maximum flexibility of operation—maximum control of the mesh and distribution of sizes in the five finished products.

The Dorr Sand Preparation System is equally applicable to the washing and sizing of other types of sand — concrete, asphalt, filter and special purpose sands. A sand deposit deficient in certain essential grain sizes no longer means an inability to make top specification products.

A Dorr engineer will gladly explain the Dorr System and what it will do under your own conditions.

DORRCO

THE DORR COMPANY, INC., ENGINEERS

NEW YORK, N. Y. . . . 570 LEXINGTON AVE.
ATLANTA, GA. . . . CANDLER BUILDING
TORONTO, ONT. . . . 80 RICHMOND ST.W.
CHICAGO, ILL. . . . . 221 NO. LA SALLE ST.
DENVER, COLO. . . . . COOPER BUILDING
LOS ANGELES, CAL. . . . 811 WEST 7TH ST.

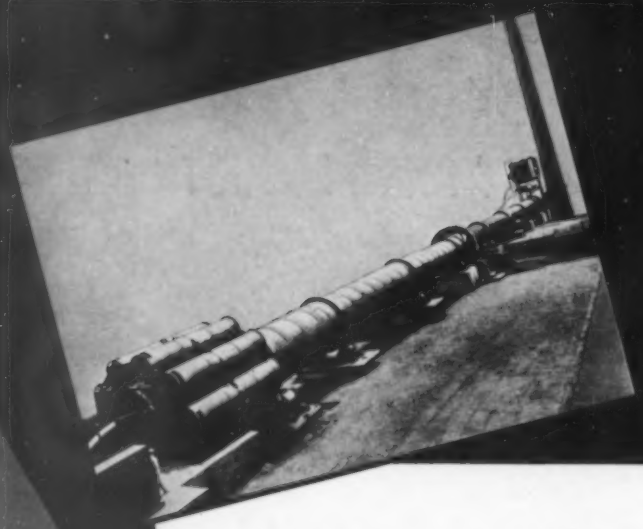
RESEARCH AND TESTING LABORATORIES
WESTPORT, CONN.

SUGAR PROCESSING
PETREE & DORR ENGINEERS, INC.
570 LEXINGTON AVE., NEW YORK

DORR

RESEARCH ENGINEERING EQUIPMENT

ADDRESS ALL INQUIRIES TO OUR NEAREST OFFICE

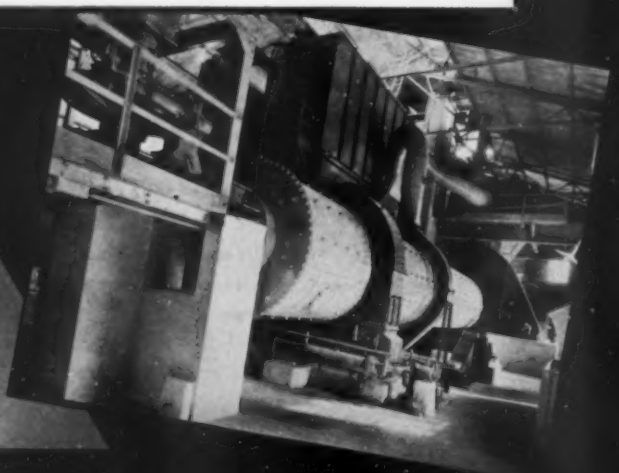


ROTARY KILNS

Machinery for Cement-Lime-Ore

In addition to a complete line of Rotary Kilns and Grinding Mills, F L. Smidth & Co. also manufacture Coolers, Pre-Coolers, Pre-Heaters, Recuperators, Air Separators, Agitators, Packers, Extractors, Feeders, Burners, etc. and their auxiliary equipment, for the manufacture of Cement, Lime, Ores, and Allied Products

GRINDING MILLS



F. L. SMIDTH & CO.

60 EAST 42ND STREET

CEMENT ENGINEERING
CEMENT MACHINERY

NEW YORK, N. Y.

Gives A-W Crushers Outstanding Output

● Numerous construction and design advantages are responsible for the continuous full-load production of A-W Crushers . . . day after day . . . year after year. Extra large shafts and immense self-aligning roller bearings make possible smoother operation at higher speeds. Deeper crusher jaws, set at sharper crushing angles, increase output because the movable jaw moves more nearly parallel with stationary jaw.

A-W Jaw Crushers are made in the following sizes: 10" x 16" (bronze bearing); 10" x 20"; 10" x 36"; 12" x 20"; 15" x 20"; 18" x 38"; 21" x 38".

The A-W complete line of Crushing and Screening Equipment—all engineered to step up yardage, lower operating costs and prevent expensive delays—includes Roll Crushers in 30" x 18" and 40" x 22" sizes, conveyors, screens and bins for both fixed and portable plants.

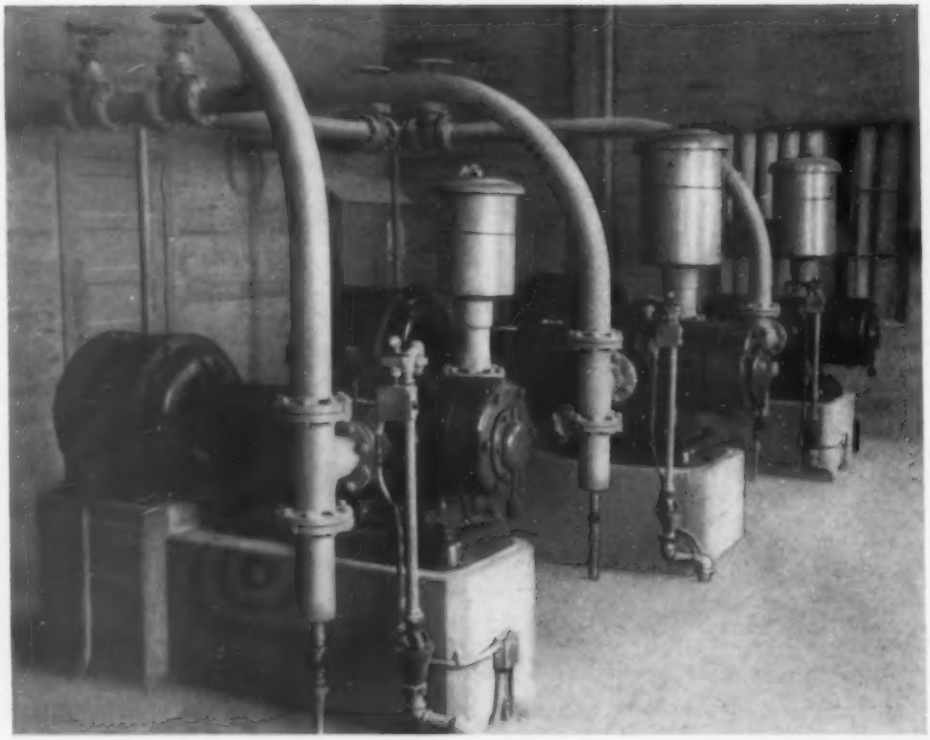
Austin-Western's competent staff of trained men will gladly assist in the economical solution of your rock crushing problems . . . whether they be large or small . . . whether the requirements call for a complete new plant or the addition of equipment to modernize set-ups now in use. THE AUSTIN-WESTERN ROAD MACHINERY CO., Aurora, Illinois.

MOTOR GRADERS
LOADERS
BLADE GRADERS
ELEVATING GRADERS
HYDRAULIC SCRAPERS
CRUSHING AND
SCREENING PLANTS

Austin-Western

CABLE SCRAPERS
ROLLERS
ROLL-A-PLANES
MOTOR SWEEPERS
BITUMINOUS
DISTRIBUTORS
SHOVELS AND CRANES

A West Coast Cement Company USES 16 FULLER ROTARIES



Just another result of the satisfactory operation of one Fuller Rotary Compressor installed in 1934 by a West Coast cement company. The excellent over-all performance of this initial installation "sold" this company on the adaptability of Fuller Rotaries for cement-plant operation. Result—the installing of 16 units up to the present time. Included in this total are seven machines purchased in 1940, when it was decided to rebuild and modernize this plant, three of which are shown in the above illustration.

As time goes on, more and more cement plant superintendents and engineers are installing Fullers. They're the ideal unit for many uses, viz: slurry agitation . . . fuel, natural gas . . . machine shops . . . quarries . . . Fuller-Kinyon Systems for dry raw materials, cement, flue-dust and pulverized coal.

Send for a copy of our new Bulletin C-5, illustrating and describing these machines.

YOUR COMPRESSORS spot WHERE YOU NEED THE AIR

FULLER COMPANY

CATASAUQUA, PENNSYLVANIA

Chicago: 1144 Marquette Bldg.
San Francisco: 320-321 Chancery Bldg.

C-67

FULLER-KINYON, FLUXO, AND AIRVEYOR CONVEYING SYSTEMS · · · ROTARY FEEDERS AND DISCHARGE GATES
ROTARY AIR COMPRESSORS AND VACUUM PUMPS · · · AIR-QUENCHING COOLERS · · · · BIN SIGNALS

"WITH GULF QUALITY LUBRICANTS WE *beat the heat* AND ENDED TUBE MILL BEARING FAILURES"

Says cement mill Foreman

Actual photo of a Gulf engineer consulting with cement mill Foreman on tube mill lubrication.

"BECAUSE of the heat transmitted by the hot aggregate, failure of this tube mill bearing was a regular occurrence until we called in a Gulf engineer and used the quality oil he recommended," says this cement mill Foreman. "Since then we haven't lost a bearing. And as bearing temperatures now remain well below the danger point, I'm certain this tough lubrication problem is licked for good."

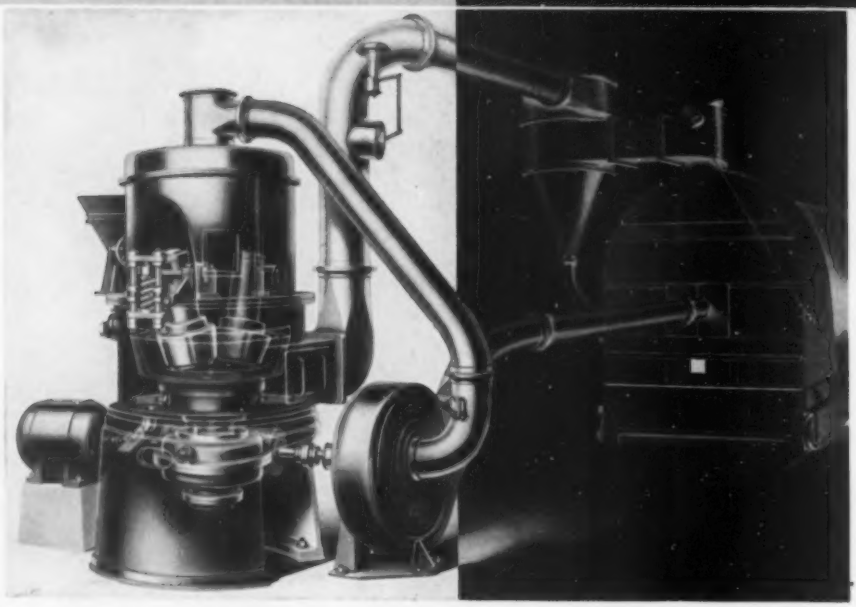
This is one of many leading cement mills which enjoy uninterrupted production and low maintenance costs with Gulf higher quality lubricants in service. For Gulf lubricants have been manufactured to provide an extra margin of protection for all types of cement mill equipment, even under severe operating conditions. Built into these lubricants is remarkable *stability* and *endurance*—they have the *stamina* to stand up and take it when the going gets tough.

Is any of the equipment in *your* mill vulnerable to breakdowns due to continuous peak-load operation? Play safe—ask a Gulf engineer to check over your equipment and recommend the proper application of the right Gulf lubricants. The Gulf line of more than 400 quality oils and greases is quickly available to you from 1200 warehouses located in 30 states from Maine to New Mexico. Write or 'phone your nearest Gulf office today.

GULF INDUSTRIAL LUBRICATION

GULF OIL CORPORATION · GULF REFINING COMPANY · PITTSBURGH, PA.

SUSTAINED PRODUCTION
DAY and NIGHT
Month after Month



with the RAYMOND
BOWL MILL

With 24-hour operating schedules now being made the "order of the day," the importance of the Bowl Mill becomes greater than ever before.

Producers of lime and cement who plan to step up their kiln capacity to 100% can maintain that high rate indefinitely by using the Bowl Mill system of direct firing pulverized coal.

The Raymond Bowl Mill is engineered and built for just such heavy duty service. It is capable of running continuously for months at a time without shutdowns. All adjustments for feed, fineness, drying, lubrication, and compensation for roller wear, may be made while the machine is running.

The panel board, shown below, gives an operating picture of pressures throughout the system, also the power required, the rate of feed and temperature. Admission of hot air for drying is automatically controlled.

Investigate this modern method of direct firing. Full information on its adaptability to your plant requirements will be gladly furnished.

Write for CATALOG No. 43

BOWL MILL

THERMOSTATIC CONTROL including complete mill operation.

RAYMOND PULVERIZER DIVISION
COMBUSTION ENGINEERING COMPANY, INC.
1307 North Branch Street CHICAGO
Sales Offices in Principal Cities • • • In Canada: Combustion Engineering Corporation, Ltd., Montreal

A WAR MESSAGE
to
ALL EMPLOYERS

★ From the United States Treasury Department ★

WINNING THIS WAR is going to take the mightiest effort America has ever made—in men, in materials, and in money! Every dollar, every dime that is not urgently needed for the civilian necessities of food, clothing, and shelter, must, if we are to secure final Victory, be put into the war effort.

An important part of the billions required to produce the planes, tanks, ships, and guns our Army and Navy need must come from the sale of Defense Bonds. Only by regular, week by week, pay-day by pay-day investment of the American people can this be done.

This is the American way to win. This is the way to preserve our democratic way of life.

Facing these facts, your Government needs, urgently, your cooperation with your employees in *immediately* enrolling them in a

PAY-ROLL SAVINGS PLAN

The Pay-Roll Savings Plan is simple and efficient. It provides, simply, for regular purchases by your employees of United States Defense Bonds through systematic—yet voluntary—pay-roll allotments. All you do is hold the total funds collected from these pay-roll allotments in a separate account and deliver a Defense Bond to the employee each time his allotments accumulate to an amount sufficient to purchase a Bond.

The Pay-Roll Savings Plan has the approval of the American Federation of Labor, the Congress for Industrial Organization, and the Railroad Brotherhoods. It is now in effect in several thousand companies varying in number of employees from 3 to over 10,000.

In sending the coupon below, you are under no obligation, other than your own interest in the future of your country, to install the Plan after you have given it your consideration. You will receive—1, a booklet describing how the Plan works; 2, samples of free literature furnished to companies installing the Plan; 3, a sample employee Pay-Roll Savings authorization card; and 4, the name of your State Defense Bond administrator who can supply experienced aid in setting up the Plan.

To get full facts, send the coupon below —today! Or write, Treasury Department, Section B, 709 Twelfth St., NW., Washington, D. C.

HOW THE PAY-ROLL SAVINGS PLAN HELPS YOUR COUNTRY

1. It provides immediate cash now to produce the finest, deadliest fighting equipment an Army and Navy ever needed to win.
2. It gives every American wage earner the opportunity for financial participation in National Defense.
3. By storing up wages, it will reduce the current demand for consumer goods while they are scarce, thus retarding inflation.
4. It reduces the percentage of Defense financing that must be placed with banks, thus putting our emergency financing on a sounder basis.
5. It builds a reserve buying power for the post-war purchase of civilian goods to keep our factories running after the war.
6. It helps your employees provide for their future.

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up to 40 minutes per day per truck!

Defense construction of all kinds needed in a hurry! This Rex Hi-Discharge Moto-Mixer is one of countless Rex's filling this need on defense projects all over the western hemisphere.

A SAVING of 40 minutes per day per truck means a lot these days on any ready-mixed job. And that's what Rex Moto-Mixer users are getting these days, thanks to *quick-as-a-flash end-charging*. Rex has eliminated the time-wasting charging door of ordinary truck mixers and the need for having truck operators leave their cabs during charging operations. This alone saves as much as 5 minutes a batch!

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For instance, the Rex Hi-Lo mixing action means faster and more thorough mixing; and the handy Rex Quint-Spout makes discharging easier, under all conditions.

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HI-DISCHARGE AND CONVENTIONAL TYPES

CHAIN BELT COMPANY OF MILWAUKEE

Rock Products

309 WEST JACKSON BOULEVARD
CHICAGO, ILL.

February 1, 1942

Dear Subscriber:

Chicago, Ill.: We, the editors of ROCK PRODUCTS, present to you in this issue what we believe is the most attractive book ever seen in our industry. If you like it, we'll keep up this style of issue. Our editorial treatment is entirely new. Instead of long plant descriptions - or "write-ups," as many of you call them, we have dissected the material available into the various kinds of operation or processing involved. Thus, you will find separated out helpful suggestions on Quarrying, Screening, Transportation, Management, etc., using particular company operations as illustrations. We are using color generously. Also, we have tried to make the articles more readable and more attractive - to tell as much as possible with pictures, rather than text. If you read this and like the new setup, write and tell us about it, won't you now?

Lewiston, Penn.: Pennsylvania Glass Sand Co. is reported to have purchased the plant of the Century Silica Co. near Emlenton, Penn., for a rather unusual reason. The purchaser did not want the plant but the equipment in it, which will be dismantled and moved to its Mapleton operation. There may be more profit for some other rock products companies in selling their equipment than in operating under war conditions in some localities.

Buffalo, N.Y.: Manufacturers of concrete products machinery seem to be less adversely affected by priorities on steel and other materials than most other manufacturers supplying the building materials industries. At the National Concrete Masonry Association convention just held, a prominent machinery manufacturer was notified by his supplier of steel for pallets that his needs for 1942 would be guaranteed 100 percent. Concrete masonry is being used widely in government construction.

Washington, D.C.: Secretary Frances Perkins, of the Department of Labor, reported that average hourly wages of industrial workers in November increased 1.5 percent to a new all-time high record of 78.1 cents.

Buffalo, N.Y.: After completing their biggest year in history, National Concrete Masonry Association members anticipate another big year in 1942. A large volume of masonry will go into the construction of new industrial plants, government and private housing and into the building of new cantonments. It is expected that at least 400,000 private homes under $6000 will be built and possibly 100,000 government-financed houses. Nearly every state will have a cantonment.

Washington, D.C.: General impression is that the Interstate Commerce Commission will grant a percentage increase in rail freight rates, with exceptions perhaps of specific increases of 3 to 5 cents per ton on coal, coke, ore and possibly some other bulk raw materials. The National Sand and Gravel Association has asked to be heard to remind the I.C.C. that every previous rate increase has cost the railways business. The picture is somewhat different now though in that the railways are likely to have all the business they can take care of; and truck and tire shortages may make competitive truck haulage more costly.

Chicago, Ill.: Digesting the opinion of "experts" it would appear that no labor shortage is anticipated in 1942. After that, if the war is still on, there will probably be five to ten million men in the armed services and there may be a shortage of able-bodied men. "The Wall Street Journal" best summarizes the situation thus:

> "Stimson-Knox have revealed U. S. war strategy for 1942.
> "It's BIGGEST news, little appreciated. The U. S. war plan:
> "1. Lick Germany first, try to hold Japs meanwhile, lick them later.
> "2. Keep U. S. Army small (only 3.6 million by year end). The reason -
> "3. Rush Roosevelt's huge arms output to Russia, Africa, Britain, Indies, China.
> "Big U. S. fighting force will come in 1943 or later IF Russia, Britain cave in. This master plan means U. S. must work more than it fights - this year."

Buffalo, N.Y.: According to an investigation conducted by the National Concrete Masonry Association, unduly high construction labor costs in building with concrete masonry have hampered the acceptance of concrete masonry for some types of army construction. It is understood that the costs for laying 8- x 8- x 16-in. concrete block, in building barracks at a cantonment, ran as high as 30¢ each for labor alone. This situation is expected to be cleared up in 1942.

Chicago, Ill.: Apropos of the editorial in this issue on labor representation in management, it develops from Congressional investigations that labor union net assets (in such unions as this information is available) were in excess of $82,500,000 as of March 31, 1941. Probably by now these unions have in excess of $100,000,000 in tangible net assets. If labor union officers are good financial managers they are not going to let union assets remain in idle cash - and they don't have national elections to buy every year. It is quite conceivable that they could buy into ownership in American industry, and with good financial management and cooperation with each other get themselves elected to company boards of directors by strictly legitimate methods.

Chicago, Ill: We spotted the following squib in "Printer's Ink" for January 16:

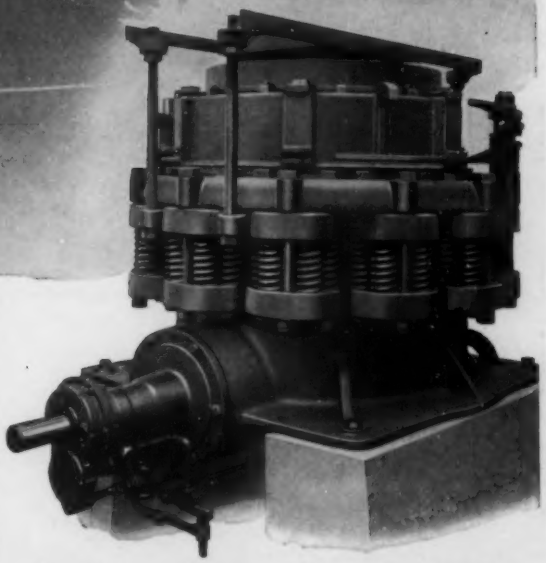
> "Sanding Sugar?
> "It took years for grandfather's laugh line to come true, the one about the grocer sanding the sugar. Now a Buffalo firm will sell sand in twenty-five pound packages through grocery stores. Sand is for air raids."

Evidently Eleanor is doing the sand and gravel industry some good.

The Staff

MORE AND MORE MINUS ½ INCH CRUSHING IS BEING DONE WITH *Short Head Cones*

Within the past few years, there has been a decided increase in the use of Symons Short Head Cones wherever fine crushing is being done in quantity. In the few states shown here, more than 70 are already in service. Most of these Short Heads have been installed to follow Standard Cones and to provide greater output of more finely crushed product than was possible with the original Cone installation. This combination of Short Head and Standard is ideal in meeting present day demands for capacity production of minus ½ inch materials. Only those sizes need be made for which there is immediate sale. Stock piling and later re-crushing of unsalable sizes are avoided.



If you are making products under ½ inch, make them more profitably by installing a Short Head Cone. Write us about your fine crushing problem and get the benefit of our experience in solving similar reduction problems on practically every type of material.

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SYMONS CONE CRUSHERS

"...LET US STRIVE ON TO FINISH THE WORK WE ARE IN; TO BIND UP THE NATION'S WOUNDS; TO CARE FOR HIM WHO SHALL HAVE BORNE THE BATTLE, AND FOR HIS WIDOW AND FOR HIS ORPHAN; TO DO ALL WHICH MAY ACHIEVE AND CHERISH A JUST AND LASTING PEACE AMONG OURSELVES AND WITH ALL NATIONS."

Reprints of this picture, suitable for framing, will be furnished without charge upon request on your company letterhead.

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LABOR'S PARTNERSHIP IN MANAGEMENT

WE WERE DISCUSSING the change in scheme insisted upon by the automobile industry, that the joint board representing management, labor and public, to help convert the industry from automobile manufacture to munitions manufacture, be advisory only, with no managerial powers. The other party to our discussion was the executive of a rock products company.

Undoubtedly this rejection of organized labor's bid for a voice in the management of the automobile industry met with the approval of a vast majority of the employers in this country. Commentators in the newspapers and business press described it as an attempt to establish socialism; made in bad faith to disrupt industry organization at a critical time; etc.

It has seemed to us, in thinking about this and other phases of the same problem—accomplishment of a genuine partnership of capital and labor, or of capital, management and labor—that for national labor-union politicians to sit on boards of directors of big industries would be fatal to peace and harmony in those industries, since the national labor-union politicians would probably look upon such board membership merely as an opportunity to enhance their prestige as agitators. It would destroy the efficiency and productiveness of any organization in short order. It would be socialism in its worst possible form, with stockholders, public and employes all holding the bag.

On the other hand, it is very doubtful if anything is going to prevent American industry from approaching much nearer to socialism than it was prior to the New Deal's advent, and the present world war. What is desired by nearly everyone is an American solution to this world problem (or world revolution)—a solution that will leave us at least a part of what the people of this country have gained in the exercise of human freedom, private enterprise, individual talent and thrift. However, if we condemn the propositions put forward by union leaders or politicians, leaving out their motives, which we do not know, we must at the same time be able to think logically—and be able to act constructively, when it is time to act—toward accomplishing the desired solution.

With something like the foregoing as background, we asked our executive friend: "Would you want a labor representative on your own board of directors?" He thought a minute, and replied: "I think I would." He then explained that his company had had no labor difficulties with either A. F. of L. or C. I. O. (it has plants organized by both). He said if they were treated fairly and as partners in the enterprise, union officers had an excellent grasp of the business problems of the organization and were always willing to go along, when time was taken to explain; provided, the explanation and course to be pursued were "on the level." These were *local* union officers, probably in most cases employes of the company.

Now, what follows is not an argument for or against this or any other kind of labor representation in management; we merely list a few points or truths for employers to consider, if they want to approach this problem of socialization of industry constructively:

(1) It is generally recognized that the war will end with some approach to worldwide socialism. Our government will already own a vast plant for production of whatever it chooses to produce, and it will have so regulated privately-owned industry that it will be government managed to all practical purposes.

(2) Organized labor, probably with a united front, will be the most powerful political factor in our commonwealth—therefore, will, as now, largely influence government policy.

(3) The only logical American solution to a socialistically-minded government is a genuine partnership of labor, capital and management. Few will concede that such a solution can be brought about by installing politicians on the management boards of industry.

(4) A logical solution may be one or more union representatives on individual company boards of directors if those union representatives are elected by the company's own employes to represent them.

(5) There are not going to be any secrets about the financial affairs of any company. As a matter of fact there are none now. Union officers are smart enough to read financial statements, and financial statements which are not published are said to be available to union officers through connivance of sympathetic government officials. Hence, there is little basis for argument against putting all the cards on the table.

(6) At least it is debatable whether or not the claim that an employe who invests his time, talents and labor in an enterprise to the exclusion of opportunities elsewhere, really has as much investment in an enterprise as those who put up their money; the employes or their duly elected representatives should feel that they have just as much at stake in the success of the enterprise as the representatives of some bank.

We would be glad to have your views, pro and con.

Nathan C. Rockwood

NEWS ABOUT PEOPLE

EZRA C. KNOWLTON, who for the past 30 years has been connected with major construction activities in Utah and the Western states, has been ap-

Ezra C. Knowlton

pointed executive vice-president of the Utah Sand and Gravel Co., Salt Lake City, Utah. Mr. Knowlton received his B.S. degree in Civil Engineering from the University of Utah in 1915. He served in the highway engineering field in the Utah State Road Department for 25 years and worked up through the ranks of nearly every engineering capacity in the state organization, becoming chief engineer in 1937. He resigned that position early in 1941 to take up duties as office engineer in the construction quartermaster's office which had jurisdiction over construction work at Ogden Ordnance Depot and Utah Supply Depot, from which position he retired to accept his present appointment.

•

W. C. BUCHANAN, director and member of the executive committee, Allis-Chalmers Mfg. Co., Milwaukee, Wis., was elected president of the company to succeed Max W. Babb. Mr. Buchanan has for the past six years devoted a substantial portion of his time to the Globe Steel Tubes Co., Milwaukee, of which he is president, and in which capacity he will continue. Mr. Buchanan was born in Johnstown, Penn., where he attended school up to the time he was 16, at which time he began studying mechanical engineering and metallurgy at a division of Carnegie Tech. set up by the United States Steel Corp. He worked first for the Cambria Steel Co. at Johnstown in 1904 and by 1912 was in charge of a number of the company's rolling mills and finishing departments. When W. H. Donner bought the New York Steel Co., Buffalo, N. Y., which later became the Donner Steel Co., Mr. Buchanan was engaged to assist in the rehabilitation of this plant. Then followed a series of important jobs with the American Tube & Stamping Co., Bethlehem Steel Co., and Trumble Steel of Warren, Ohio. After that he went into financing in Cleveland and had a hand in consolidating various steel firms, including Continental, Empire and others. In the early part of 1929 he joined the Keystone Steel & Wire Co., of Peoria, Ill., and was vice-president and general manager of that concern when in 1935 he resigned to take the presidency of the Globe Steel Tubes Co., in Milwaukee. Mr. Buchanan is also a member of the Board of Directors of the Milwaukee Gas Light Co.

•

CHARLES L. KNAUS, recently statistician for the Wyoming highway department, Cheyenne, Wyo., has been engaged as design engineer by Basic Magnesium, Inc., Las Vegas, Nevada.

•

CLARENCE C. JONES, president and general manager of the Wolverine Portland Cement Co., Coldwater, Mich., for the last 21 years, has announced his retirement, effective the last week in January, 1942. Mr. Jones has been with the company since its inception in 1899. He has been a director since 1905 and from 1910 to 1918 he served the company as first vice-president. During the three-year period from 1918 to 1921 he was secretary and treasurer, being elected president in 1921. He also was superintendent of the Quincy plant for about six years.

•

GERALD ROCKS, sales engineer and secretary of Grand Rapids Gravel Co., Grand Rapids, Mich., is one of the executives regularly attending the annual seminar conducted by leading scientists and research engineers at the University of Michigan, for the purpose of making available the latest developments of scientific laboratories of all kinds, involving concrete and asphaltic construction.

•

MAX W. BABB, president of Allis-Chalmers Mfg. Co., Milwaukee, Wis., has been elected chairman of the board of directors. Mr. Babb was born in Mount Pleasant, Iowa, in 1874, and obtained his A.B. degree at Iowa Wesleyan College in 1895, subsequently studying law at the University of Michigan, where he received his LL.B. in 1897. Upon leaving the University, he became associated with his father in the practice of law in Mount Pleasant, Iowa, where he remained for seven years. In 1904 he moved to Chicago and joined the Allis-Chalmers Co., as its attorney, and has been with the company and its successor, the Allis-Chalmers Mfg. Co., since that

Max W. Babb

time. From 1913 to 1932 he was the sole vice-president of the company and in 1932 became its president. Mr. Babb is a director and member of the executive committee of Allis-Chalmers Mfg. Co., and is also a director of the Federal Reserve Bank of Chicago, and a trustee and member of the executive committee of the Northwestern Mutual Life Insurance Co. He is a director of Cutler-Hammer, Inc., and a trustee of Milwaukee-Downer College of Milwaukee, Wis.; also director of the Wisconsin Telephone Co.

JOHN C. BOWEN, vice-president of the Lehigh Portland Cement Co., Allentown, Penn., has been elected to the board of directors of the company, to fill the vacancy caused by the death of Dr. Benjamin F. Fackenthal, Jr. Mr. Bowen has been associated with the company for 30 years and has served as a vice-president since 1926. He is in charge of eastern sales.

•

ROBERT W. MCALLISTER, familiarly known as "Mr. Mac" by all cement plant employes and by others throughout the company, is the capable and energetic superintendent of the Columbia Cement plant, Zanesville, Ohio. He has been with the company for 20 years, beginning as an efficiency engineer at Columbia Chemical, transferring to Zanesville in 1924 as chief engineer later becoming master mechanic. He became superintendent in 1930, succeeding Robert Parsons, who with two other employes was killed in a coal mine disaster. Born and educated in Glasgow, Scotland, he first tried out his engineering skill with the largest shipbuilding firm in the world—Fairfield. In 1909 he came to Pennsylvania and shortly afterwards was with Babcock & Wilcox Co. The McAllisters have two sons, one, a sales manager with Babcock & Wilcox; the other, plant engineer wtih the Ayres Mineral Co. Mr. Mac, like his forebears, loves water; and operates the fastest craft on Buckeye Lake. In fact, he likes speed, whether on land, water, or in the air. His only trip to his homeland was made via a trans-Atlantic passenger plane. No wonder the plant can produce 5500 bbl. of cement a day!

•

CAPTAIN WILL R. BURNS, in charge of the Birmingham Slag Co. office in Selma, Ala., has been transferred to Huntsville, Ala., and J. M. Jones has taken his place in Selma.

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ALBERT M. BROWN has succeeded Harry C. Huffstetter, deceased, as president of Brown-Huffstetter Material Co., Indianapolis, Ind.

•

BAIRD SNYDER, who was Deputy Administrator under General Philip B. Fleming, now Federal Works Administrator, has been named Acting Administrator of the Wage and Hour Division, by Secretary of Labor Frances Perkins, until further notice. Mr. Snyder was born in Lansford, Penn., in 1900. He attended Cornell and Yale Universities and was graduated from Massachusetts Institute of Technology in 1924 as a Civil Engineer. His first engineering work was a survey of coal lands in Venezuela; and he was later assistant superintendent of Lawrence Colliery at Mahanoy Plane, Penn. He subsequently operated a factory at Elyria, Ohio, and headed his own construction company. He became principal engineer of the Resettlement Administration several years ago, where he was first associated with General Fleming. He was later chief engineer of the Farm Security Administration before coming to the Wage and Hour Division in 1939, and became Deputy Administrator of the Division in June, 1940.

•

T. B. STURGES, president and general manager, Pennsylvania Drilling Co., Pittsburgh, Penn., has been re-elected president for the year 1942. F. C. Sturges was elected vice-president and general manager, and John H. Melvin was elected treasurer.

•

L. J. LAND, materials engineer for the Alabama highway department at Montgomery, has accepted a position with the federal government in Washington. In point of service, Mr. Land is one of the oldest employees of the highway department. His former duties will be assumed temporarily by J. F. Tribble.

•

C. H. SONNTAG, who supervised the construction of the Cumberland Portland Cement Co., Cowan, Tenn., has been appointed senior engineer in the Office of Production Management in Washington. Mr. Sonntag also served as consulting engineer on the design and construction of the Lawrence Portland Cement Co., Thomaston, Me.

Front row, from right to left: Michael Brisch, chairman of the board, Rockwell Lime Co., and his four sons, Michael, Jr., president; Tom, attorney and secretary; back row, left to right, Carl, treasurer; and John, vice-president and general manager

Father and Sons

ON ANOTHER PAGE of this issue is illustrated the new lime putty and mortar plant of the Rockwell Lime Co., Chicago, Ill., and Manitowoc, Wis. The putty plant adjoins the Brisch Bros. brick plant at Streator, a suburb of Chicago. The lime comes from the Rockwell Lime Co. plant, Manitowoc, by rail in bulk. The Brisch Bros. brick company incidentally is a subsidiary of the lime company, being a later enterprise.

Michael Brisch and his brothers were originally contractors. In 1905 they founded the Rockwell Lime Co. and in 1925 the brick company. Now Mr. Brisch, senior, has just retired as president of both to become chairman of the board. He is succeeded as president by his son Michael, junior. The other officers and directors of the two companies are his other three sons; John, vice-president and general manager, who has donned his uniform as a private in the United States Army; Carl, treasurer; and Tom, who is an attorney, is secretary.

We doubt if many fathers in the rock products industry are as fortunate in their selection of executive staff and board of directors.

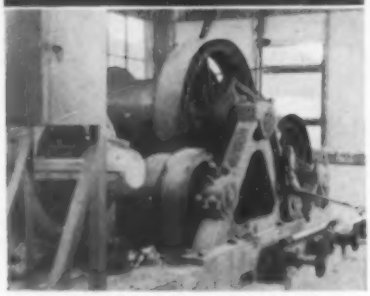
•

E. B. CAPE, formerly materials and test engineer for the Texas highway department at Austin, has been appointed district engineer for the Asphalt Institute in the territory comprising Texas, Oklahoma and Arkansas, with offices at Austin, Texas. R. J. Hank, superintendent of aid projects since 1930, has succeeded Mr. Cape. Harvey E. Deen, supervising engineer, succeeds Mr. Hank.

HINTS AND HELPS FOR SUPERINTENDENTS

New Coal Handling System for Cement Mill

ALL THE COAL used by the Davenport, Iowa plant of Dewey Portland Cement Co., is brought by barge from southern Illinois fields to the company's docks on the Mississippi river. To permit all-winter operation without any interruption of deliveries due to ice or other navigation difficulties, an unusually large tonnage of coal is stored in open stockpiles as a reserve until barges may again operate during the late Spring months.



Above: View of cement plant from window of hoist house, showing coal stockpile and conveyor which carries coal to top of plant. Below: Two-drum hoist with controls on the platform, above

The illustrations show the new coal handling facilities completed in the Fall of 1941 to do a more efficient job. Coal received by barge is unloaded by clam shell to the stockpile over a reclaiming tunnel conveyor for delivery to the plant. At the end of the tunnel near the barge docks, a concrete abutment wall with wings on each side rises to a height of about 25 ft., which serves to confine the coal away from the dock area.

Projecting above the wall on each side of the door are concrete pilasters in which steel I-beams are imbedded. These I-beams serve as end posts for the pulleys for one end of the cable drawing the Sauerman scraper bucket which distributes the coal unloaded from the barge over the stockpile area and then returns the coal over the tunnel as required.

A new reinforced concrete hoist house is located at right angles to the coal stockpiles necessitating the unusual arrangement of swivelling pulleys through which the cable to the scraper bucket is drawn by the Thomas hoist.

The Thomas hoist driven by electric motor is located on one level in the hoist house, and the hoist operator stands on a platform above with the controls within easy reach, having a complete view of the stockpile area through the windows which surround the top portion of this building.

The 18-in. conveyor within the tunnel going to the top of the plant is in two equal length flights of 350 ft. An automatic chain belt vibrating feeder, under the manually operated sliding gate, pays out coal to the belt. This belt delivers coal to individual kiln tanks of 75-ton capacity.

This new system replaces the old coal handling system whereby coal was unloaded by crane to storage and then by the same crane to coal cars after which it was taken approximately 1000 ft. and unloaded in another storage pile, and from thence to an elevator and 350 ft. belt conveyor to the storage bins over the kilns.

Preventing Breakage in Storage

B. V. HEDRICK GRAVEL AND SAND CO., Lisleville, N. C., in building a new storage system for gravel, took special precautions to hold down breakage, particularly in 1- to ½-in. gravel. This product is used for base surface treatment and is restricted to a maximum of eight percent minus ½ in. (0-8 allowed).

Special chute developed to reduce breakage in stockpiling 1½-in. gravel. Maximum drop is 55 ft. Vertical chute openings are located every 4 ft. with baffle every 2½ ft.

Left: New hoist house with coal storage and tunnel conveyor reclaiming system to the right. Right: Scraper bucket and system of pulleys for distribution and reclaiming coal

The storage system consists of reinforced concrete vertical walls to separate the gravel according to sizes. Gravel is dropped into bins, the maximum vertical fall from a belt conveyor being 55 ft.

In the bin compartment for 1- to ½-in. gravel, a vertical stone ladder has been installed to break the fall of the gravel as it comes off the conveyor head pulley. The ladder is of ½-in. thick sheet steel, 12 in. square with openings every 4-ft. of its height out of which the gravel can flow to storage. Inside the ladder are baffles every 2½ ft. on the sides of ladder.

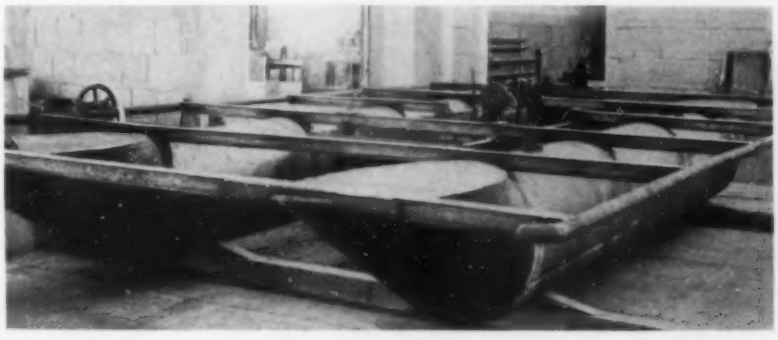
In operation, with storage empty, the gravel will have its fall retarded down to the bottom of the ladder, which will fill up to the lowest opening, through which the gravel flows out into the area. As the pile builds up, this opening will be covered over, the ladder will fill up to the next opening and flow out there, until it is covered over, etc. Thus the maximum drop of gravel on the pile is held to 4½-ft. even when the pile is just begun. Breakage is being held down to less than one percent.

Ingenious Working Barge

By JACK F. PRUYN

A Pacific Coast producer recently built an all-steel barge from discarded sections of pipe with connecting steel frame members welded together. Details of the barge construction are shown below.

The 30-in. pipe was cut with an oxy-acetylene torch and the ends set at an angle and enclosed by welding to form the pontoons. Transverse I beams across the top of the pipe sections and tied together by welding formed the supports for the barge deck. The barge can be motor driven by suspending an inboard motor in a box slung between the two 30-in. pontoons. This construction also would be suitable for a dredge pump.



Steel pontoon dredge barge of unusual design cuts down resistance to movement through the water

Alert steam shovel operator prevented truck from plunging over bank by holding it with the dipper bucket until workmen arrived to pull the truck back to the road

Steam Shovel to the Rescue

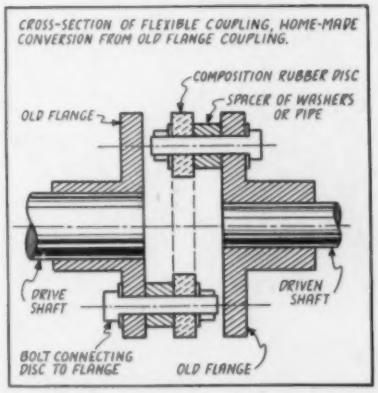
E. V. Ragland, secretary-treasurer of the Superior Stone Co., Raleigh, N. C., was the photographer who took this picture of a steam shovel averting a costly accident. The drive chain of the truck broke and the truck was about to plunge over the bank, but the shovel operator was on his toes. He extended the boom and stopped the truck in the nick of time with the dipper bucket. The incident happened recently at the company's quarry near Kings Mountain, N. C.

Flexible Coupling For Screen Drive

By ROBERT A. HARKER

In the accompanying sketch may be seen the construction details of a flexible coupling which was made by converting an old solid type flange coupling.

The coupling may be made from parts on hand, such as the flanges from an old coupling. A flexible disc from a small piece of conveyor belting is cut to size and punched accurately to take the bolts, preferably three radially spaced on the drive and three radially spaced on the driven flanges. A better disc can be obtained at an automobile parts



Construction details of flexible coupling for driving a vibrating screen

store, but even a good piece of leather would serve. The radius of the bolt centers should be the same for both the drive and the driven units.

As shown in the illustration, the coupling has a 6-in. diameter disc, and has been successfully driving a 40- x 60-in. Robins Vibrex screen, direct-connected to a 3 hp., 1750 r.p.m. electric motor. The vibration does not cause the motor to heat and the screen gives much better performance than it gave with a flat belt drive.

It is believed that this flexible coupling will stand considerable misalignment and still give satisfactory service.

Lehigh's New Office Building

LEHIGH PORTLAND CEMENT CO.

Allentown, Penn.

1 — Office of President Joseph S. Young

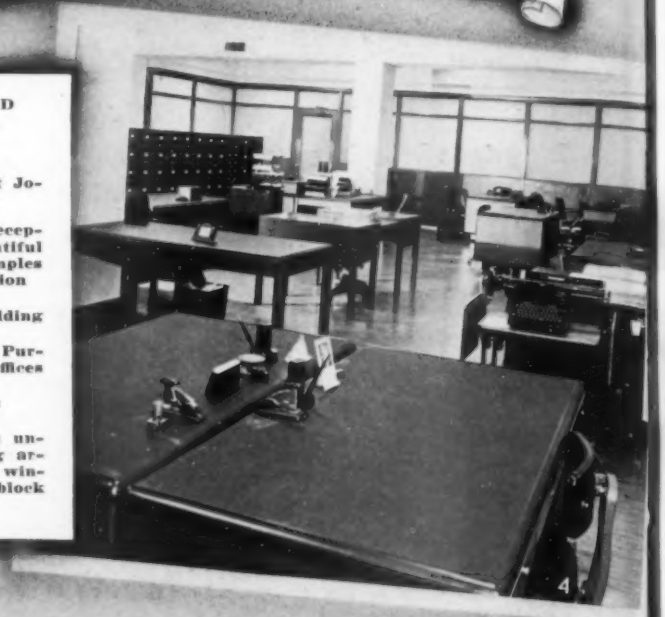
2—Each floor has a reception room with beautiful murals of modern examples of concrete construction

3—The new Young Building

4 — A corner of the Purchasing Department offices

5—Ladies Lounge

6—Drafting room has unusually fine lighting arrangements with the windows set in glass block walls



Lehigh Spends Real Money For Employe's Welfare

Program in the interests of employes includes construction of modern change house, garages for workers' cars, new drinking water facilities, dust collectors, and safety guards

Sanitary wash house facilities which have been standardized at Lehigh's plants. Showers in background; wash fountain foreground; and circulating ice water

DURING THE PAST FIVE YEARS the Lehigh Portland Cement Co., Allentown, Penn., has made capital investments totalling $670,000 in its various plants, which are entirely for the benefit of employees. The expenditure is part of the company's long range program of safety and welfare, and is invested entirely in the interest and convenience of its employees.

These conveniences have included the installation of additional dust collectors, new drinking water facilities, the building of automobile shelters for workers' cars, drainage and sanitary sewers and modern change houses.

None of these capital expenditures can be justified in savings in costs. Depreciation of the facilities provided, in fact, will raise the unit costs of plant operation. Lehigh considers such an increase in overhead expenses justified as tangible evidence that the management is sincerely interested in providing good working conditions for the employes. Good working conditions and fair treatment the management realizes are conducive to making a satisfied employe. Safety appliances are in evidence throughout all the company's plants with the object of giving every consideration to the elimination of accidents.

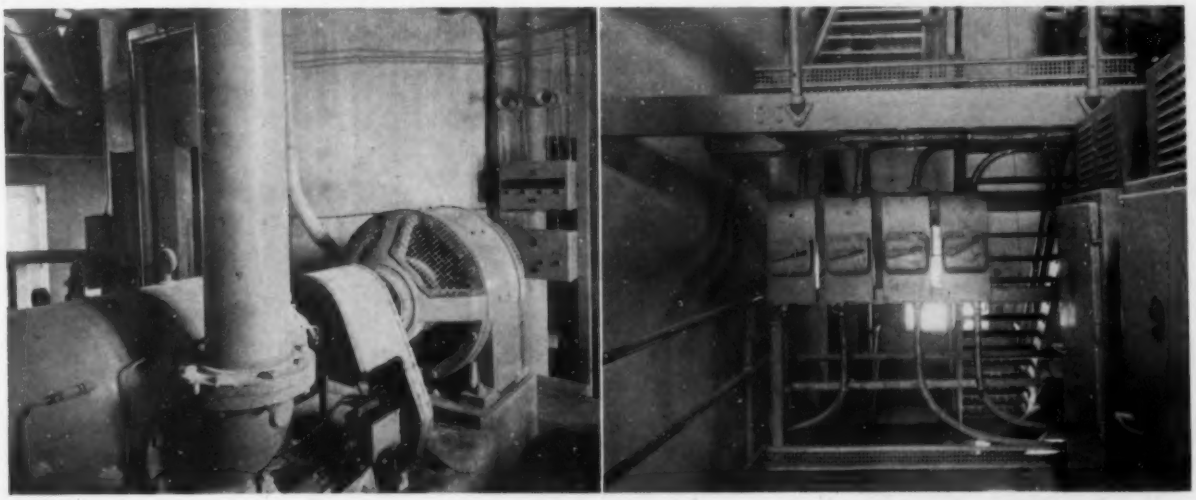
Joseph S. Young, president of the company, and Raymond R. Bear, vice-president and general manager, are the prime movers in this movement to make working conditions as desirable as possible at all of their fourteen plants, which are widely located throughout the country.

Several of the company's midwestern plants were visited for the express purpose of inspecting the conveniences for employes and the kinds of safety devices in use. Accompanying illustrations are from photographs taken in the plants at Iola, Kansas, and Mason City, Iowa. They also represent the types of installations already made, or planned for future building, at the other plants.

All-Time Record for Safety

The Iola plant will be remembered as the plant that established the all-time record for safety in the portland cement industry. Almost 13 consecutive years were completed without a lost-time accident up until 1939.

About 150 men work at this plant, and washrooms and garage facilities have been provided to accommodate them all. Workers' cars are kept under a roof in a fireproof shed that measures 224 ft. long with a capacity of 52 automobiles. It is constructed of steel framing, with an asbestos



Left: Motor driving cement pump in packhouse has a screen over openings to protect men working in the vicinity. Right: Safety electrical equipment, guard rails, and tailboards to prevent dropping tools accidentally to floor below are shown in this illustration of Iola plant

Above: Change-house at Iola, Kan., plant. Change houses are complete even to their own heating plants. Below: Garage facilities at mill provide fire-proof protection for workers' cars

roof and concrete floor. The worker has access to automobile storage by either of two concrete roads leading into the plant from U.S. 59.

Each workman, upon arrival at the plant, punches the clock in a new change building that houses locker rooms, showers, lavatories and drinking fountains. According to the superintendent, practically all the employes avail themselves of the facilities and are thus able to get out of their working clothes and clean up before going home.

Separate change houses are provided for the white men and the colored men. The foremen have their own separate facilities which are located in the main change house. In this change house there are 200 steel lockers for white employes, with ten private showers, two wash fountains that accommodate ten men each at a time and five private toilets. Foremen have 24 lockers, two showers, one wash fountain and one toilet. Thirty-six lockers are provided for the colored men in their change house. Each locker is divided to keep working clothes separated from the others and each bank of lockers is vented by an overhead fan. Assignment of the lockers is scattered according to the workers' shifts so that no adjoining lockers will be used at any one time. Each of these change houses has its own automatic heating plant and a full-time janitor keeps them spotlessly clean. The men are coöperating 100 percent in keeping a clean house. Circulating cooled drinking water is available in the change houses; and other conveniences such as antiseptic treatment for athletes foot are provided in the shower rooms.

All notices and information of importance to the men are posted on a bulletin board inside the entrances to the change houses.

Cool drinking water is provided through electric water coolers which are located in the various departments throughout the plant. Containers with salt tablets are placed adjacent to these water coolers.

Dust Collectors Keep Plant Clean

Dust collectors have been installed in this plant principally to make working conditions better — particularly in the pack house and in the bag cleaning department. Three bag type collectors are serving the packing stations and one is connected to the bag cleaner, making these two departments practically free from dust.

All hazardous conditions in the plant are completely guarded according to accepted standards for protection. Safety First committees have been established at all Lehigh plants and operate according to a general program approved by the operating executives and in charge of the Director of Safety and Welfare. Members of the Safety Committee at each plant make monthly inspections as to safety, guarding, housekeeping, fire prevention and fire protection. The reports of these inspections are submitted in writing at the regular monthly Safety Committee meeting, and have the immediate attention of the Superintendent. All recommendations are forwarded to the Department of Safety and Welfare, Allentown, where they are available for the attention of the operating executives, thereby enabling them to keep in constant touch with the Safety First program and working conditions at the various plants. Periodic inspections are also made at each plant by the chief inspector or his assistant who are part of the Safety and Welfare department in the company's home office in Allentown.

(Continued on page 69)

Tier of lockers in one of the washhouses. Each man is assigned a locker which has one side set aside for work clothes and the other for street clothes. Lockers are vented

Topics for Plant Safety Meetings

By A. J. R. CURTIS

THE SAFETY ORGANIZATION is the main spring of accident prevention effort in every plant; that is because accident hazards in an industrial establishment center around these four elements:

Men
Their environment
Operating methods and practices
The extent of enthusiastic safety interest

Men comprise by far the most important of these four elements. Man-failure causes many accidents; machine-failure causes very few except where men are responsible for machine-failure; operating methods and practices are developed and employed or rejected by men; enthusiasm flows from the soul of men. It is not the product of a mechanical or chemical process.

Plant men will all agree as to the importance of the men-factor. Likewise they will agree that the power which men wield is increased tremendously with effective organization. Good organization for safety in an industrial plant is represented by the plant safety committee. The latter must develop successful plans for the safety program, provide competent leadership, secure necessary facilities, maintain continual interest, and find a job and a place for everyone.

There are at least several good patterns for the plant safety committee. The best of them provide certain indispensable features such as the following: (1) Revolving membership to make room for a maximum number of different individuals to serve in a small group and to make it possible to dispose of inactive members; (2) Groups or subcommittees to handle various routine and special jobs, using not only committee members but drawing upon all of the men of the plant force so far as possible; (3) An educational program to keep the committee and the plant force informed on new technical and other developments; (4) A regular schedule of carefully planned meetings for the handling of regular and special business; (5) Provision for research of the plant's safety problems; (6) Careful recording of the minutes of safety meetings and of accident records.

Questions and Answers About Safety Meetings

1. How many members should compose a plant safety committee for effective results?

Usually from 12 to 20, but possibly fewer in small plants.

2. How large should subcommittees be?

Usually from 3 to 7 members, depending on the purpose for which formed.

3. What are the functions of commonly appointed subcommittees?

Plant inspection, accident investigation, housekeeping, safeguarding, publicity, fire protection. Special subcommittees often arrange mass meetings, dinners, picnics, athletic and social events and undertake planning of special programs, events and campaigns.

4. How often is it desirable for plant safety committees to meet?

Such meetings, for routine business, are usually held at intervals of two weeks but some committees meet monthly; some meet once a week.

5. How long should the sessions be?

Usually 45 to 60 minutes. Just long enough to complete the regular order of business, carefully arranged so that no time is lost. Adjourn as soon as the business is completed and never allow a meeting to drag.

6. Is advance preparation for safety committee meetings desirable?

Very much so. The chairman should plan the program, and each individual feature with great care, notifying well in advance those who have assignments.

7. Who may serve most appropriately as committee chairman?

Superintendent, assistant superintendent, safety supervisor or some especially qualified department head. The ablest man available in the organization.

8. Where is a well qualified committee secretary usually found?

Safety supervisor, chief clerk or superintendent's secretary.

9. For how long a term are officers and members of safety committees usually chosen?

Officers, one year, eligible for re-election. Members, all department heads continuously; others, three to six months.

10. Where and at what hours do safety committees meet?

It is most important that a comfortable, quiet room be provided for plant safety committee meetings. Comfortable chairs, not benches, should be provided. These should be arranged around a conference table. If the plant does not provide such a place, many plants hold these meetings in a local hotel. The most popular meeting time is Monday morning. Others use an afternoon hour, noon hour or serve a quick dinner, meeting immediately thereafter.

● *MEN who carry or share responsibility for the safety of any plant organization feel the constant need for fresh topic material and fresh methods of appeal. Safety must be resold over and over again. The subject may be an old one but its treatment can never be allowed to grow stale. Because they serve as the principal medium for the development and interchange of discussion and planning, plant safety meetings are the main fountain heads of fresh stimuli for the safety campaign.*

This is the first of a series of articles to appear under the title of "Topics for Plant Safety Meetings." The current article discusses "The Plant Safety Organization," that indispensable unit wherein mechanical, human relations, health, safety and management thinking intermingle on common ground with a common lofty objective. Your comments are invited.—EDITOR.

WASHING

Get Rid of Clay With Surplus Water

Large volume of water carrying material to plant in long sluices reduces need for washing at screens

WASHING operations at the B. V. Hedrick Gravel and Sand Co. plant at Lilesville, N. C., involve the use of large volumes of water, the picking of foreign materials, and large scrubbing capacity.

Washing starts at a hopper above the plant into which pit-run material is dumped from 12-cu. yd. side-dump cars. An estimated 20 percent of all the material handled is clay.

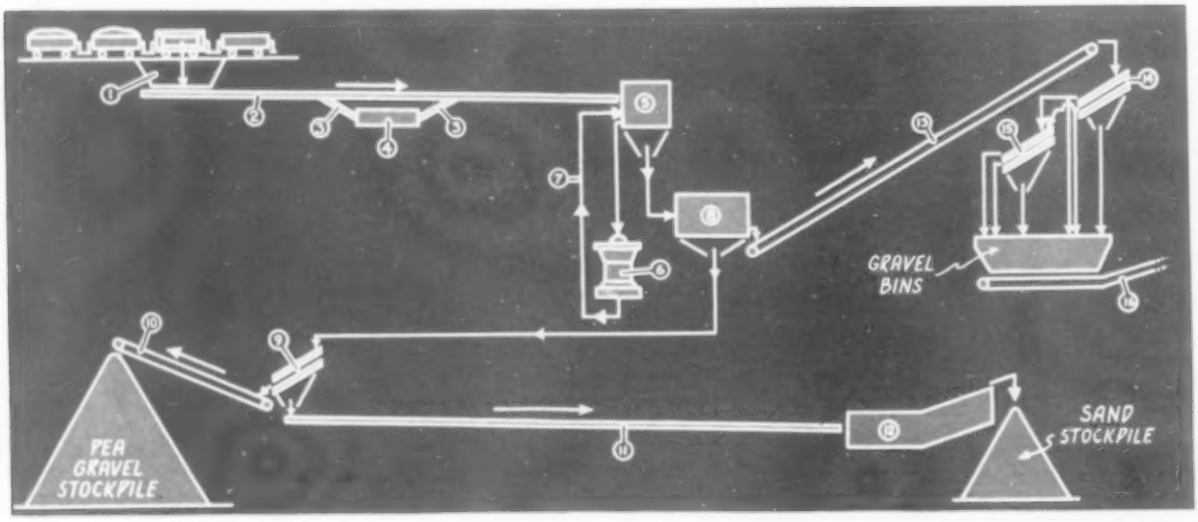
Handling of the material to the plant scalping screen is done by sluicing from the hopper through 250 ft. of 24-in. flume, with the application of 2000 g.p.m. of water in the hopper. The gradient of the flume is 13 percent and the capacity of sand and gravel to be handled is 200 tons per hour.

Hopper, with car dumping, from which water is flumed to plant. Small car contains picked material. By-pass in flume permits running material through or around scrubber

Much of the clay is loosened and emulsified as the material tumbles through the flume at high velocity. The job of washing, through the plant screens, is much less as a result. Some picking of large clay lumps, sticks, etc., is done by an attendant who flicks them out with a pitchfork as they travel by him in the flume.

An auxiliary flume and scrubbing drum are provided alongside the main flume to be used when pit conditions require further agitation for the removal of clay or soft particles in meeting certain specifications for soundness. The auxiliary flume leads into the feed end of the scrubber from the main one and returns from the discharge end of the scrubber to the main flume. The entire stream can either flow straight down to the

Pit run sand and gravel is dumped into the hopper (1), where large volumes of water are added to launder it through the flume (2) into the revolving screen (5). When clay is running heavy, the stream is diverted as shown through flume (3) into drum (4) to break up lumps and return into flume (2). Plus 2-in. gravel from screen (5) drops into a No. 3 Telsmith gyrasphere crusher (6) and the crusher discharge is conveyed by belt conveyors (7) back for rescreening. All minus 2-in. gravel from screen (5) enters revolving screen (8) from which minus ½-in. material is screened over "Seco" vibrating screen (9) to size out pea gravel which is stockpiled by belt conveyor (10). All the fines from screen (8) launder through flume (11) into sand drag (12) and the sand is stockpiled. Plus ½-in. gravel is conveyed from revolving screen (8) by belt conveyor (13) to 4- x 12-ft. "Seco" double-deck sizing screens (14) and (15) and the gravel sizes drop into bins. Reclaiming belt conveyor (16) loads out into railroad cars. Derrick cranes rehandle the stockpiled sand



Overall view of B. V. Hedrick Gravel & Sand Co. plant. Left to right: Stockpiling derrick, screening plant; new storage system on right. Picker uses pitch fork to catch debris in flume

washing plant, or be "detoured" through the scrubber and returned into the main flume. Scrubbing is done through a 6- x 24-ft. drum, with internal lifting blades, which is driven through flat belt by a Caterpillar Diesel engine.

Crushing and Screening

Gravel and sand from the flume flows into an 8- x 8-ft. revolving screen, which scalps out plus 2-in. gravel into a No. 3 gyrosphere crusher. The unders launder into an 8- x 12-ft. revolving screen, from which point plus ½-in. gravel is carried over a 24-in. belt conveyor to the finishing screens. Minus ½-in. goes over a 4- x 12-ft. double-deck vibrating screen to size out pea gravel. Fines and water through this screen launder to a large sand drag where sand is classified and dewatered for direct stockpiling or loading into cars. The revolving screens have large diameters and function, in part, as scrubbers.

To Dissolve Stone Concern

GROVE CITY LIMESTONE CO., Sharon, Penn., with plant at Osborne, Penn., has been in court on the petition of A. C. Curtis and E. H. Tinkelpaugh, Youngstown, Ohio, who asked that the company be dissolved and a receiver be appointed.

Gravel—10,000 Carloads

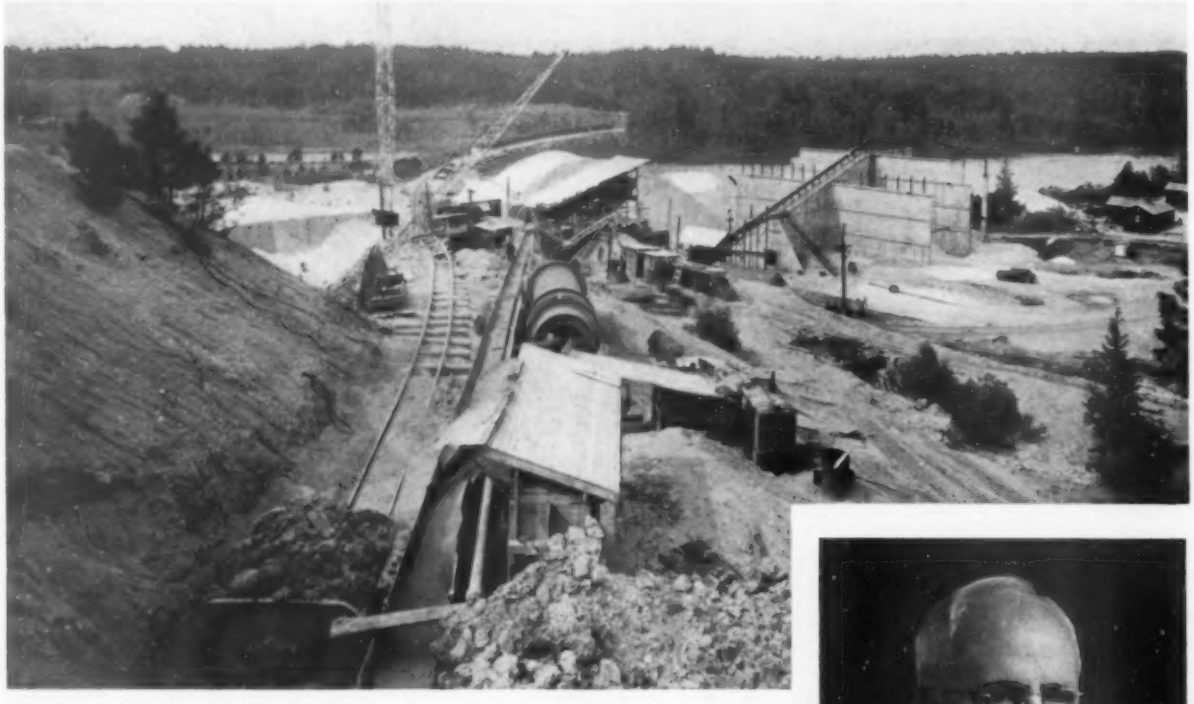
LILLINGTON STONE CO., Lillington, N. C., has a contract to supply 10,000 carloads of gravel for construction of the Durham Triangular Division Army Cantonment. The gravel is being shipped at the rate of 50 to 60 carloads daily from an old gravel pit between Lillington and Summerville that had been abandoned for several years.

All the sand from the gravel plant is flumed to this sand drag for classification, dewatering and stockpiling. The drive is from a tractor power off-take

In the background is the screening plant with the scrubber in the foreground. Note that flumes will either put material through scrubber or by-pass it to the plant

HAULAGE

Rail Haul with Sluice to the Plant



Crushing and screening plant of B. V. Hedrick Gravel & Sand Co. in background with new storage system to the right. In foreground is flume carrying sand, gravel and water to plant. Revolving scrubber may be seen to one side of track

B. V. Hedrick

EXCAVATION at the B. V. Hedrick Gravel and Sand Co. pit, Lilesville, N. C., is accomplished by two Bucyrus-Erie draglines, operating in the pit. One is a 4-cu. yd. steam-driven dragline, the other a 3-cu. yd. Diesel-powered, converted from steam power by a Cummins engine.

The draglines load to 12-cu. yd. side-dump, Western contractor type cars on 36-in. gage track. Trains of four loaded cars are hauled by steam locomotives, of which there are two, or in five to six-car trains by two new 25-ton Plymouth locomotives powered by 200-hp. Caterpillar Diesel engines. The Plymouth locomotives operate on 2 gal. of 7c fuel oil per hour, which cost contrasts, for a 13½-hour day, with 2 tons of $6 coal for the two steam locomotives.

The trains of loaded cars from the pit dump to a hopper at an elevation of 40 ft. above the plant. The round trip from pit to hopper is 1½ miles. The dumping arrangement is a cable slung from a vertical gin pole.

At the hopper large quantities of water are added and the material enters a 24-in. flume or sluice, 250 ft. long from hopper to plant scalping screen and scrubber. The down gradient of the flume is 13 percent.

The flume extends under the full length of the hopper, 48 ft. long. The hopper is lined with steel plates and tapers down to the 24 in. flume width.

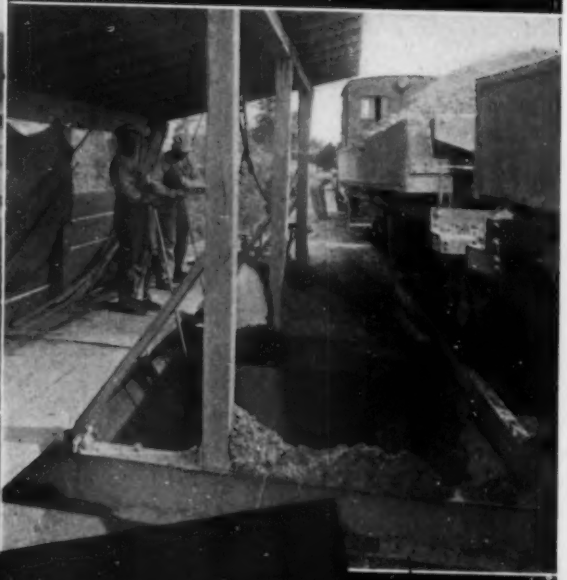
The raw material thus handled contains about 60 percent gravel, 30 percent sand, 20 percent clay and the rest is rounded gravel. Water, 2000 g.p.m., is added in the hopper at the top; the feed being about 200 tons per hour, or 3-1/3 tons per min., which figures out about 600 g.p.m. per ton of material sluiced.

The flume is built out of steel and has a side lining and bottom of high carbon steel, which outlasts ordinary steel plate 2 to 1.

Most of the clay lumps, sticks, etc., are flicked out by a workman with a fork, as the material flows down the flume.

Advantages

This method of sluicing the raw material to the plant is common to this whole district. The advantages are that the material gets a pretty fair washing in the conveying part of the operation and it avoids feeding gummy material to a belt conveyor, or other means of transportation.



Shovel loading one of the three skips on the semi-trailer

Moving Mountain To Mill

Semi-trailer and trailer combination haul 60 tons of rock from quarry to railway cars for final haul to cement plant

By W. H. CLEARY*

FOR MANY YEARS, the Southwestern Portland Cement Co. has owned a deposit of almost pure, white crystallized limestone, located in the Mojave Desert, in the vicinity of their Victorville, Calif., plant. The deposit, which is known as White Mountain, is located about 13 miles from the plant, and the quarries, which have furnished the plant with limerock and silica for the manufacture of portland cement for the past 26 years, are but six miles distance. For this reason the White Mountain deposit has been held in reserve and has been known by the company officials as the "Reserve Quarry." The amount of high lime rock in the deposit is not known. The holes, thus far drilled, have bottomed in rock containing between 95 percent and 99 percent calcium carbonate. There is between 20 million and 30 million tons of the rock in the mountain projecting above surface.

RESERVE CLAIM

Average of Hole No. 56—	78 ft. deep
SiO_2	3.26
Al_2O_3	0.60
Fe_2O_3	0.52
CaO	53.20
MgO	0.72
Ig. Loss	41.26
Total	99.56

Last spring, the company decided to open a quarry and to take about 10 percent of the rock used at the plant from this deposit. As far as mix control is concerned, this fulfilled the chief chemist's dream. With the new slurry storage tanks having a capacity of 24,000 bbl., and with lime rock available which contains between 95 percent and 99 percent $CaCO_3$, and with a low alumina-silica rock from the original quarries, life for Mr. Willson is a lot more peaceful.

*Production engineer, Southwestern Portland Cement Co., Los Angeles, Calif.

Below: Dumping one of the 8-cu. yd. skips on semi-trailer by means of a telescoping hydraulic hoist to similar capacity skips on railroad car

HAULAGE

The rock from the old quarries had been hauled to the plant by rail in cars having a capacity of about 30 tons. Three containers, each having a capacity of about 10 tons, were mounted crosswise on each car. The capacity of these containers, or skips, is limited by the size of the cars, and the Allis-Chalmers jaw crusher, into which the rock from the skips is dumped.

Consideration was first given to hauling the rock by truck from the "Reserve Quarry" to one of the loading docks at the original quarries. However, when the survey was completed, it was found that it would be more economical to have a switch and loading dock on the Mojave Northern Railroad about 3 miles from the plant. This would mean a one way truck haul of about 10 miles.

In this view may be seen the new 2½-cu. yd. shovel loading the semi-trailer skips, and in the background are drills in operation

Truck-Trailer Combination Hauls Carload of Rock

It was obvious that, if trucks could be so constructed that each truck would have three skips of the same size and spacing as the skips on the cars, and a loading dock constructed in such a manner as to permit the trucks to draw up beside and above the cars, and dump a skip at a time into the car skips, a carload of rock could be hauled by each truck. Such a truck was designed by the engineering department of the Mack Truck Co., using L. M. S. W. Mack tractors, Fruehauf semi-trailers, and Heil hoists.

A small size model of the truck skip was made, and the dumping process was demonstrated in miniature, before the plans were finally approved. The wisdom of the precautions was evident, as the trucks operated successfully from the beginning; so successfully, in fact, that another truck will be delivered very soon, and three trailers have also been ordered. This means that each tractor will haul a semi-trailer and a trailer. As the trailers will have the same capacity as the semi-trailers, the pay load will be over 60 tons. In other words, by January 1, 1942, the company intended to have in operation three units, each having a capacity of 60 tons.

Two units, now in use, each haul seven 30-ton loads every eight hours of operation. This means that 420 tons of rock per day are being delivered to the plant from the Reserve Quarry. With three units, each having trailers, in daily service, this amount will be increased to about 1100 tons per day.

(Continued on page 69)

Below: Showing how telescopic hydraulic hoist dumps skip in waiting railroad cars standing at the siding for the final haul to the cement mill

SCREENING

More Screens Cut Time Loss

New All-Steel Plant of Ohio Marble Co. producing huge tonnages of flux stone and road stone designed with ample chutes and screens for quick change-over

L. E. Townsend, general superintendent and designer of the new plant

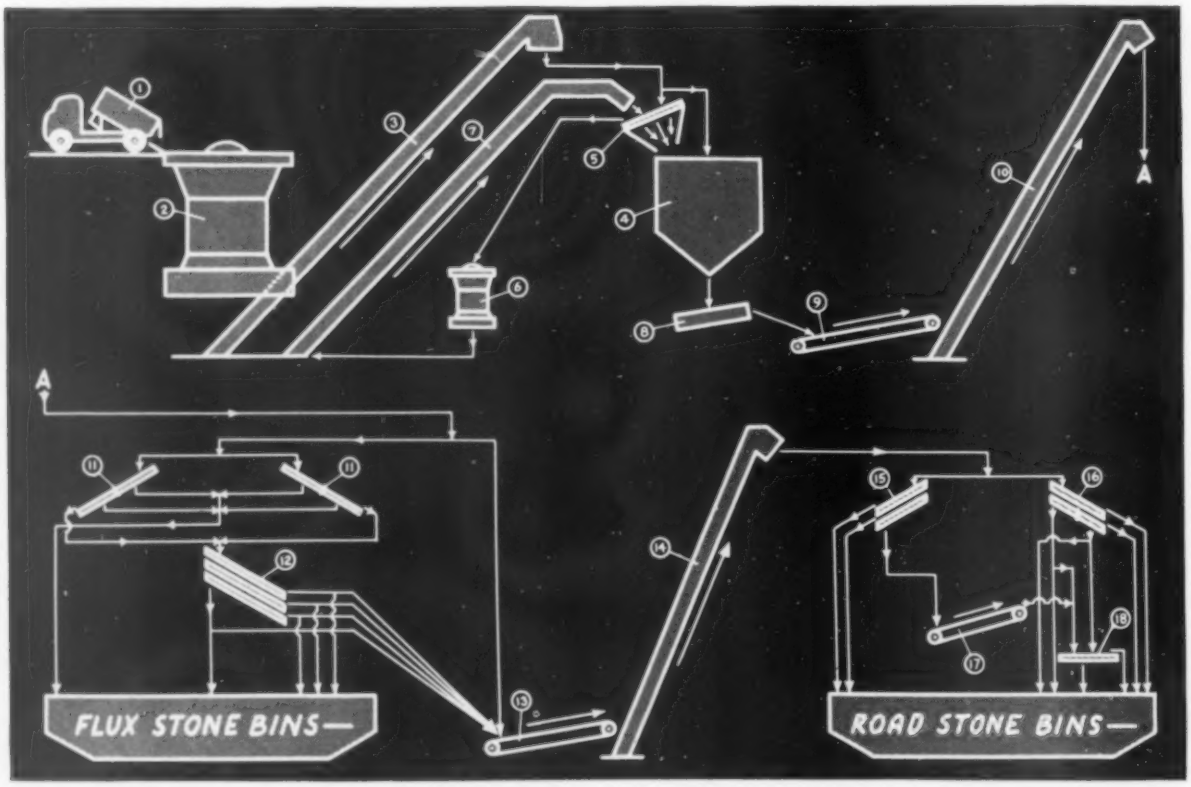
PRODUCTION of over 500,000 tons of crushed stone, to date, has been accomplished at the new plant of Ohio Marble Co. operated by the Piqua Stone Products Co., Piqua, Ohio, without any breakdowns or any changes of importance to the plant. L. E. Townsend, general superintendent, is to be congratulated for designing and supervising the construction of a plant that to date has required only minor adjustments such as changing the width or the slope of a few chutes. The new Piqua plant was built around, and included, part of the existing plant—yet stone production was halted for only two weeks.

The new plant went into service in April, 1940. Flux stone always has been the bulk of production, although new products have been added over the years, and still is the major market. All the flux stone is over 1½-in. in size and its production is 200 to 250 tons per hour—about the same as it was.

More Screening Surface Eliminates Delays

There were several important reasons for rebuilding the plant. Flexibility was one of them. It was desirable to have a plant that could quickly be changed from the production of flux stone to road stone, or the reverse. Road stone had become a more important tonnage than before and more sizes had to be made. It was necessary to speed up its production and to have more units of screen surface, to eliminate costly delays for changing screen cloth every time the product size had to be changed. Road stone can now be produced two or three times as fast as before, which means that there is less interruption to the production of flux stone.

With the new plant, flux stone operations have been improved. Different sizes can be made more easily in filling simultaneous contracts for



Showing part of the system of chutes and spouts under screens which provides a flexible means of putting stone into various bins and onto belt conveyors. Note how swiveling spouts may be turned into different chutes

different customers. The arrangement of bins and chutes into them is another major improvement. Any product can easily be put into any bin and the stone in any bin can be quickly withdrawn for the manufacture of ground limestone products. The company has a separate plant for milling an assortment of these, that reaches 30 percent of the total production when making flux stone in the main plant. It then processes all the minus 1½-in. stone.

The new plant is of steel and concrete with separate flux—and road—stone buildings interconnected by a belt conveyor. Its predecessor was built in 1909 but had been improved to meet changing conditions from time to time. Before that, a plant was operated that dated back to 1894.

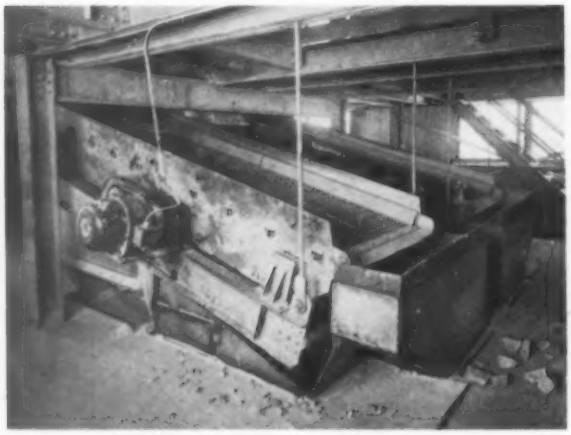
Steps in Screening and Crushing

Operation of the screening and crushing plant can be traced on the accompanying flow diagram. There are several alternate ways in which the stone may be processed through the plant. Screen No. 5 and its discharge chute are suspended from an overhead carriage that has wheels traveling on rails. It is only used when producing road stone, and the openings on the screen set the top size to be delivered over to the road stone plant. It discharges its oversize into the gyratory crusher (6) and the circuit is completed by the bucket elevator. The crusher setting is varied from ¾- up to 2¼-in. by raising the head up or down. Stone is emptied from the surge bin when changing from flux to road stone, or the reverse. When not in use the screen over the surge hopper is just rolled out of the way.

In the flux stone plant, the two single-deck screens (11) carry both 1- and 1¼-in. square openings in perforated plate. Screenings drop through split chutes into any of several bins to become the feed for the pulverizing plant. Flux stone is sized

← Flow Sheet of Plant Operations

Flow diagram for complete stone crushing plant. Truck (1) discharges into No. 30 Allis-Chalmers gyratory crusher (2). Allis-Chalmers 30-in. by 80-ft. chain-bucket elevator (3) delivers the stone into 50-ton steel hopper (4) or discharges over 4- x 12-ft. single-deck Simplicity vibrating screen (5). This screen is used only when road stone is being produced and is then closed-circuited with a 3-ft. Type TY Traylor gyratory crusher (6) by 24-in. x 60-ft. Jeffrey belt bucket elevator. Stone is withdrawn from the bin to a No. 5 Jeffrey-Traylor vibrating feeder (8) on to a 36-in. x 40-ft. Jeffrey belt conveyor (9) which transfers to a 34-in. x 90-ft. Jeffrey chain bucket elevator (10). From here the stone is either split over two 4- x 10-ft. single-deck Simplicity vibrating screens or is carried over a 24-in. x 50-ft. Jeffrey belt conveyor (13) and a 20-in. x 35-ft. Jeffrey chain-bucket elevator to the road stone plant. Throughs from the flux stone screens (11) go into a bin and the overs are sized over a 4- x 12-ft. three-deck Simplicity vibrating screen. Any of the four products of this screen may go into bins or be transferred on to the road stone plant by belt conveyor (13) and elevator (14). From elevator (14) stone can go to either, or both, a 4- x 8-ft. double-deck Simplicity vibrating screen (15) or a 4- x 8-ft. double-deck Allis-Chalmers vibrating screen (16). The overs from both decks of these screens go into bins, the throughs from screen (15) are carried by a 14-in. x 25-ft. Jeffrey belt conveyor (17) to a 3- x 10-ft. single-deck Allis-Chalmers low-head vibrating screen (18). The various sizes of road stone drop into bins as indicated



Two of the single-deck vibrating screens remove screenings from fluxstone

One of three screens in road stone plant. This is a 3- x 10-ft., single-deck, low-head screen

over the 3-deck screen (12) with perforated plate to produce 1½- to 2-in., 2- to 2½-in and plus 2½ in. flux. Seven steel bins have a combined capacity for 1050 tons of flux, either for truck or rail loading.

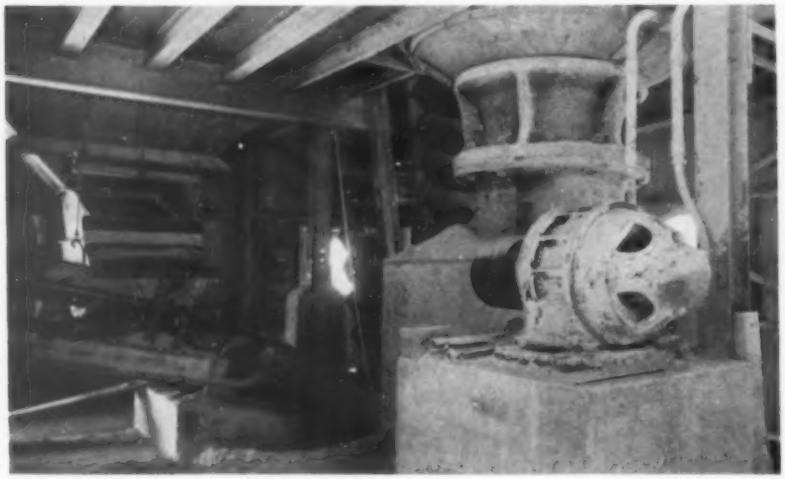
In producing road stone, the bottom is removed from the split chute feeding the screens (11) and the stone is conveyed as diagrammed to the proper screens. It will be seen that most any product being processed in the flux stone plant can be routed to the other screens. For this purpose much attention was given to chute designs. The road stone plant is superimposed over concrete bins from the old plant that hold 1600 tons in eight compartments. Either railroad cars or trucks may be loaded here and a belt conveyor can transfer some of the sizes over to the pulverizing plant.

The illustrations show the thoroughness with which chutes were built. One type of chute used might be called a revolving chute, or spout, made up of pipe sections welded together. These spouts have rubber-lined connections to the screen hoppers and can be quickly switched to discharge into several bins, either direct or through spouts, or on to belt conveyors.

Practically everything in the plant is of steel or concrete. The new buildings are of bolted steel framework with Wheeling and Armco corrugated metal roofing and siding. Champion Bridge Co. designed and fabricated the building steel work and erected it.

Screenings are ground in a plant that has, among other equipment, three tube mills, two Sturtevant mechanical air separators, Tyler Hummer vibrating screens, bag packers and a rotary dryer. The white-rock plant is equipped with a ball mill and a Sturtevant rock emery mill. Bags are packed mechanically.

Mrs. M. F. Hall is president of the Ohio Marble Co.; A. Acton Hall is vice-president, secretary and treasurer; and L. E. Townsend is general superintendent.



Crusher used when making road stone. On the left is a vibrating feeder putting stone from 50-ton surge bin on to belt conveyor

Discontinues Quarry

ALLIED CHEMICAL CO., Moline, Kan., has quit operating its crushed stone plant to give all its attention to the production of chemicals and other defense materials. It is said that the discontinued operation formerly held a near monopoly on the business in the southern Kansas territory because the rock in the deposit was comparatively easy to process.

Stone for Airport

CLAUSEN AND POPEJOY, contractors, are crushing stone on a 24-hr. schedule near Wright, Kans., for the runways at the Dodge City airport. The government has asked the company not to consider cold weather as a bar to operations and to close down only in case of a blizzard.

Crushing Plant Fire

PAUL SCHREUR'S crushing plant at Muscatine, Iowa, was damaged recently by a fire with a loss estimated at $7000 partially covered by insurance.

To Reopen Quarry

ELDORADO MATERIALS CO., Eldorado, Kan., has leased the former Young and Wiley quarry near Towanda and is starting to produce crushed stone.

Meeting Peak Demands

Ample stockpiling facilities help producer to meet large orders without excessive capital investment

A DEFINITE TREND in the aggregates industries is toward the use of larger stockpiles for finished materials. B. V. Hedrick Gravel and Sand Co., Lilesville, N. C., is an excellent example of what is taking place in many plants.

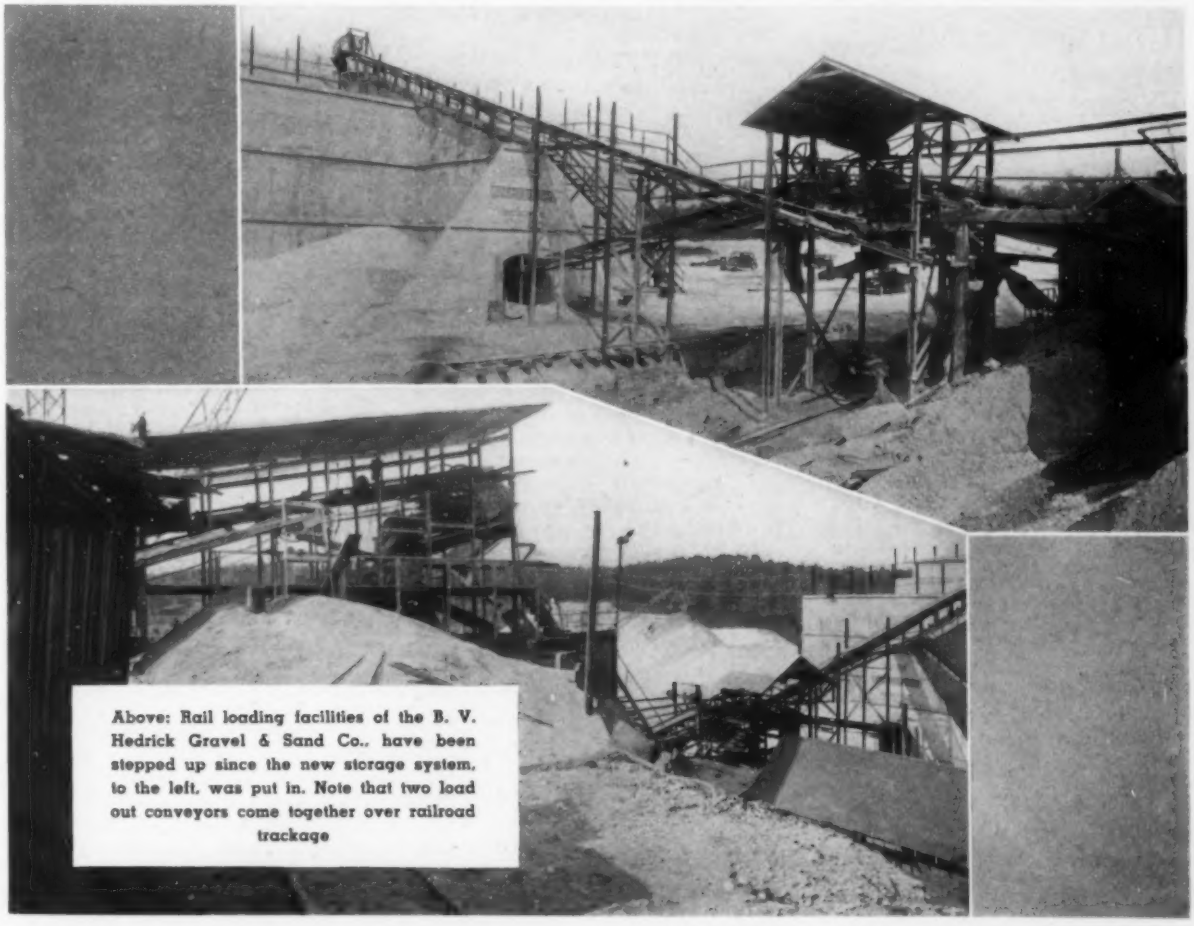
This concern has a sand and gravel plant on a hillside, with a railroad siding for loading cars at the bottom. A 36-in. belt conveyor loads into cars below bin storage of 700 tons total capacity. Sand is dewatered in a sand drag remote from the gravel plant that receives all the wash water and fines from a scalping screen through a launder. The drag can load directly into cars or drop the sand into stockpiles for rehandling into cars by clamshell. Pea gravel is stockpiled alongside the main gravel bins, by belt conveyor from the vibrating screen which sizes it.

In the main gravel storage area, the overflow from the bins is handled from the bins and back into them by a derrick with a clamshell bucket operating from a 120-ft. mast and with a 100-ft. boom. The same derrick, which has a 4-cu. yd. bucket and is powered by a 47-hp. Caterpillar Diesel engine, is used in rehandling certain sizes of gravel for recrushing. These materials are placed into a bin, from which a belt conveyor feeds the gravel back into the plant crusher.

Recently from 400 to 500 cars additional storage has been provided across the tracks. This is an open storage system with reinforced concrete partitions 55 ft. high separating the various sizes of gravel which are delivered into the storage areas by a 24-in. belt conveyor, direct from the car-loading tipple of the main plant. A tunnel belt conveyor, 24 in. wide, under the stockpiles reclaims the gravel for car-loading.

A 1½-cu. yd. Orton dragline powered by a 47-hp. Diesel engine handles gravel into dead storage.

In dropping gravel vertical distances up to 55 ft., special precautions are taken for 1- to ½-in. gravel, which is used for base surface treatment. This product is restricted to a maximum of eight percent minus ½ in. (0-8). A vertical stone ladder has been installed to break the fall of this gravel as it comes off the conveyor head pulley.



Above: Rail loading facilities of the B. V. Hedrick Gravel & Sand Co., have been stepped up since the new storage system, to the left, was put in. Note that two load out conveyors come together over railroad trackage

CONVEYORS

Practical Operation Conveyor Belts

First of a series of articles on the subject of care, maintenance and proper application of conveying systems

By MELVIN C. DOW* and HARVEY A. HARNDEN†

INTRODUCTION—In these days with the ever growing emphasis on the conservation of basic materials, all rock products operators are vitally interested in getting the utmost out of their present equipment and in making their conveying belts last as long and as well as the famous old one-horse shay. To do this is not only patriotic but good business as well, for after all, what is a belt conveyor but some fabricated iron, steel, rubber, and cotton. With this idea in mind the writers have prepared this series of articles, not as a treatise or text on belt conveyor theory, which has been so well covered by others, but rather as a series of hints and helps to superintendents, based on every day practical experience in the operation of belt conveyors.

In the field of material handling the belt conveyor occupies an important position, and through many years of experience has been developed into a highly efficient and trustworthy piece of equipment. If a stone operator's worst "headache" was his conveyor belts, what an easy life he would lead! As a matter of fact it is probably the fool-proof nature and reliability of the belt conveyor that is responsible for its general neglect. The fact that a belt will run under the most unfavorable conditions often is the cause of the belt being abused, and is the reason why those conditions are not corrected. We should like to show in this series of articles the importance of correcting those bad conditions. Many operators look upon the purchase of a new belt as an expensive outlay every so many years, rather than a constant and steady cost amounting in belt wear alone to perhaps several dollars every operating day for each conveyor. In this article we have attempted to show what the hidden costs are, how they can be found, and how they can be cut. While these observations are primarily directed to the attention of operators of conveyor belts, it is hoped that the designer who has not had experience in the actual operation of belt conveyors will find some help in these remarks.

Factors Affecting Costs

When the operator of a plant starts a study of the costs of his conveyors he finds there are certain inherent features of their design which affect their costs of operation. These are fundamentals over which he has no control. The speed and width of the belt, for example, are fixed. If the speed has been made too high to reduce the width of belt required, and the first cost accordingly reduced, he may find he is getting excessive wear at the loading and discharge points. Or, if the speed has been set too low, he may be burdened with an excessive first cost in belt and idlers or an over-loaded or overstressed belt. However, these two factors are usually the first considered by the designer and are well proportioned according to accepted practice or rules published by the various manufacturers.

The type of idlers, the size of the various pulleys, and the details of the drive have also already been fixed. Plain bearing idlers may be consuming extra power and causing extra belt stress or anti-friction idlers may be in a conveyor where they are not required to reduce belt stresses, in which case the original cost has been excessive. If the drive pulleys, tail pulley, belt pulleys, or take-up pulleys are small they are causing undue stretch in the outer plies of the belt in passing over them and a consequent early break down of the carcass. Also if they are unnecessarily large the first cost has been high, not only for the pulleys but for the greater ratio of reduction required in the drive.

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† Engineering Department, New York Trap Rock Corp., Newburgh, N. Y.

There are a great many factors to be considered in the proper design of the drive determined by the conditions of the conveyor, all of which affect the operating cost. Most of these are every day considerations to a mechanical engineer and are well covered by textbooks and manufacturer's publications. A few of the items of particular importance in conveyor drives which may be overlooked we will discuss later.

Causes of Belt Wear

The operator may find the conveyor supports have been neglected as unimportant, and have become out of line, out of level, or warped causing excess edge wear on guide idlers or excess wear on overloaded troughing idlers. All supports should be rigid, preferably of steel, and on substantial foundations. A deck plate should be provided over the stringers to prevent material from spilling on the return side of the belt, carried to the tail pulley, and ground into the bottom cover.

The operator may find if he inspects his chutes some of faulty design which if altered would reduce the wear on his belts. Chutes should be of sufficient size and proper shape to load the belt evenly with a minimum impact. He might well study them carefully as chutes are one of the most important parts of a conveyor yet are very often given little thought.

A proper housing over a belt will prolong its life. The effect of direct sunlight on rubber is well known. Rain and snow themselves will not harm a belt but if they become frozen may cause a serious accident to it. The housing also protects the conveyor machinery and supports from rust and deterioration. The housing should include walkways and ample clearances around the belt to facilitate maintenance, repairs, and daily inspection.

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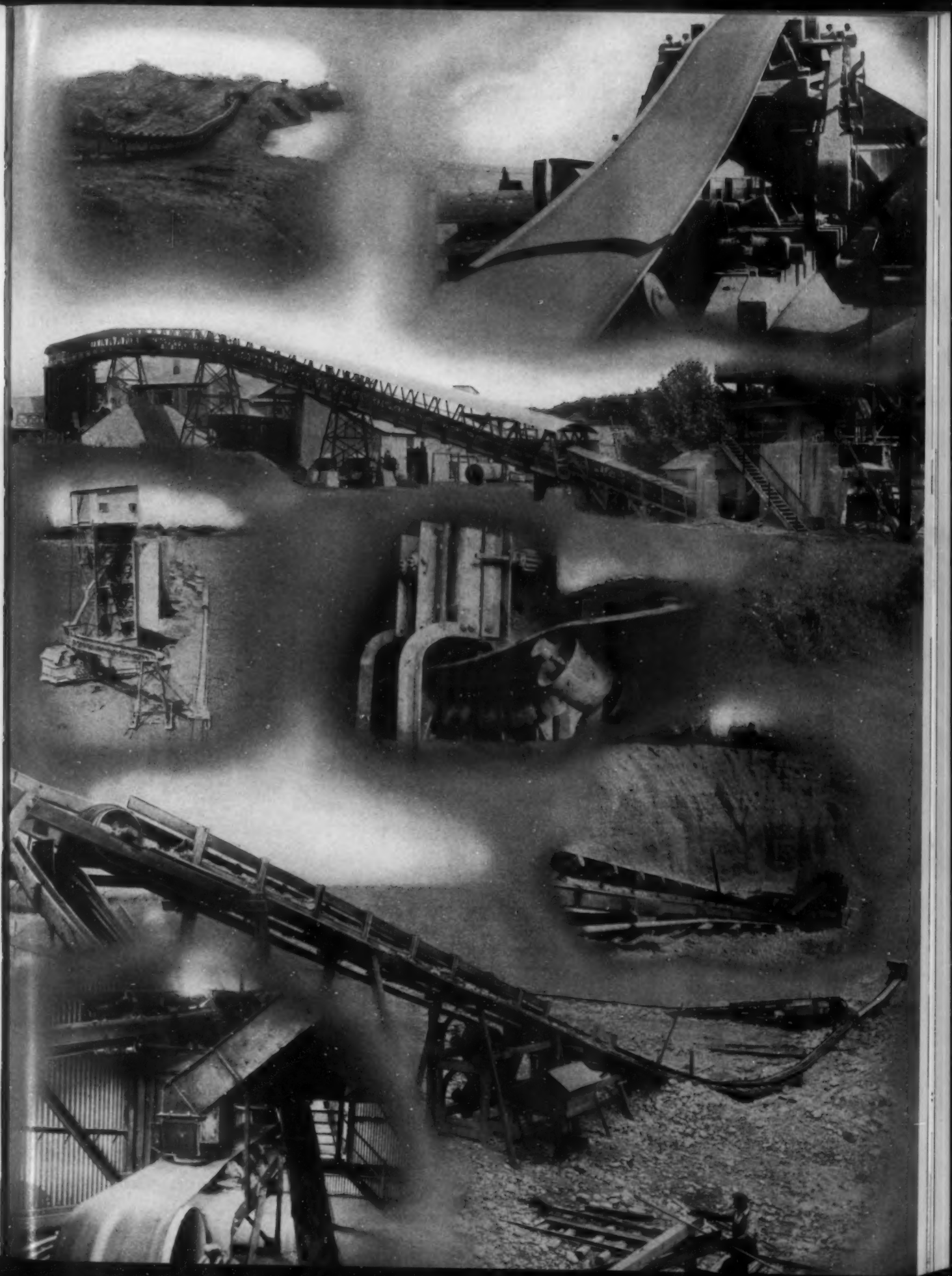


SHIPPING

Cement Shipping Problems

Modern packing plant of Universal Atlas Cement Co., Hudson, N. Y., designed to meet demands for shipments of various types in bulk or sacks

By PAUL PATTON

GOVERNED by these new requirements, the packing and loading operation at Universal Atlas Hudson, N. Y., plant was re-designed and rebuilt during the last year. The specifications met by this design, listed in order, are:

(1) Accurate weights.

(2) Clean packages.

(3) Capacity to meet peak shipping demands.

(4) Flexibility for efficient handling of varieties and packages.

(5) Low maintenance and operating costs.

(6) Features for economical inspection.

The cement storage of circular bins is made up of three groups of bins, identified as stock houses A, B and C. Of the 50 bins that make up this storage, more than 40 contain special cement or cement under test.

Recovery from the silos in stock houses A and B is accomplished by means of screw conveyors that carry the cement to 8-in. stationary Fuller-Kinyon pumps, each having a capacity of 500 bbl. per hour. Stock house C is equipped with steel-hoppered silos and two 8-in. movable Fuller-Kinyon pumps for draw-off. These pumps, also having a capacity of 500 bbl. per hour, are connected directly to the hopper of the bin from which cement is being drawn.

NOT MANY YEARS ago it was only necessary for the packing operation at a cement plant to fill orders — the one specification for this operation was quantity. It was generally understood that the shipment would be made in cloth sacks loaded into railroad box cars. The orders placed in the packing department today, in comparison, are fastidious. It is not unusual to receive an order late in the afternoon specifying a minimum carload to be shipped the same day — RUSH — for, say, 10 bags of type A cement, 6 bags of type B cement, 20 bags of mason's cement, 20 barrels of gray cement in pasted end paper bags, and the remainder of the car to be filled out with cement in the familiar old cloth sack. On the other hand, the late order may specify ten cars of bulk or it may specify a quantity of cement tested by an outside laboratory.

In addition to adequate packing and loading facilities, the cement plant today must be equipped with a large bin storage for the purpose of setting aside storage orders for ten or more testing laboratories and for setting aside cements that meet a variety of specifications as to fineness and chemical composition. It must be possible to ship this variety of cements from all of these storages as ordered out by the customer, without contamination, and with a minimum amount of fringe loss. Arrangements must be provided for making these shipments in various types of packages or in bulk; in accurate amounts; in clean packages; and on short notice.

THE AUTHOR

It is possible to circulate cement from a bin to any other bin in the storage—a feature designed in the installation of transport lines.

An additional bulk cement storage is located on the east bank of the Hudson river, and the necessary equipment for making water shipments in packages or bulk. This operation is located about 1¾ miles from the plant proper. Cement is transferred to the river packing operation by means of bulk hopper-bottom cars and a Fuller-Kinyon transport system.

The Packing Unit (Fig. 2)

Cement from stock houses A, B and C is delivered to the pack house through 8-in. transport lines. The transport line from each stock house is equipped with three remote-control, motor-operated valves (Fig. 3) so that the cement may be directed to any of the three packing units or to the bulk loading station. Pressure alleviators are installed in the pack house above each packing unit at the point where the transport lines terminate, and the transport air is vented into a bag-type dust collector (Fig. 4). Cement gravitates from the pressure alleviator on to an electric vibrating screen and then into a surge hopper having a capacity of 120 bbl. Scalpings that pass over the screen fall through a pipe into a collecting box on the first floor level.

Cement is fed from the surge hopper by means of a variable speed rotary feeder into a right- and left-hand distributing conveyor that is built into the top of non-choking hoppers, one over each of the packing units (Fig. 5). This conveyor has no bottom and the cement in excess of packing machine requirements is returned by gravity overflow pipes to the elevator boot. In this way a constant head is maintained on the packing machine filler housings. Flow indicators are installed in the overflow pipes for the purpose of setting the variable speed rotary feeder.

Unlike the flow sheet shown in Fig. 2, the long axis of the elevator is located on a center-line between the

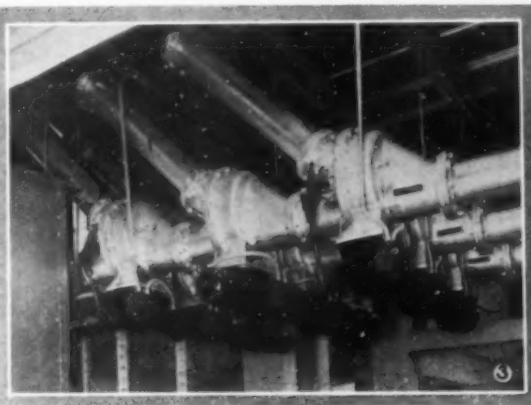


Fig. 3: Motor-operated valves in pack house (three in each transport line) for directing cement flow to packing units or to bulk loading station

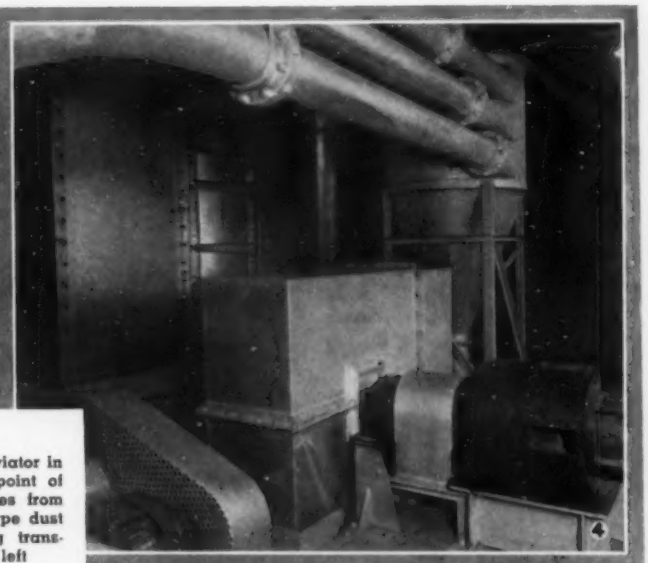


Fig. 4: Pressure alleviator in pack house at end-point of cement transport lines from stock houses. Bag type dust collector for venting transport air is at left

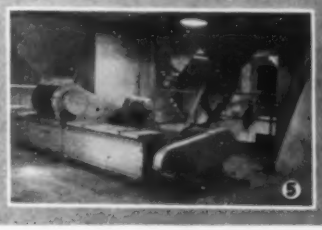


Fig. 5: Bottom of surge hopper, variable-speed rotary feeder, and right and left-hand distributing conveyor over packing machine hoppers in left foreground. Elevator casing is in middle background

Fig. 6: Two electrically-operated, four-spout packing machines that make up No. 2 packing unit. Operators are in packing position

Fig. 7: Discharge table at end of Cyclone wire-mesh conveyor belt that carries filled packages from the packing machines

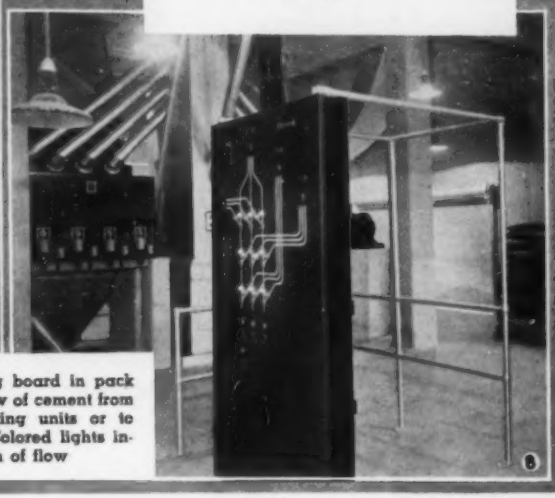


Fig. 8: Central routing board in pack house that controls flow of cement from stock houses to packing units or to bulk-loading station. Colored lights indicate direction of flow

Fig. 9: Pack house at left; bulk-loading station at right. Note box cars spotted for loading at pack house and two loaded hopper bottom cars that have been pulled off the track scale under bulk-loading station

casing of which acts as a vertical manifold and settling chamber. The pressure in the elevator casing is maintained at a negative value of about 1.5 in. of water by means of a suction fan that exhausts the system through a cloth air vent. The entire system is maintained at negative pressure by short connections to this elevator casing and the entire system is made air-tight in order to conserve the capacity of the suction fan for the eight packing machine vents, also directly connected to the elevator casing, four on each side (see Fig. 8, left). The packing room is dust-free.

The electrically-operated, four-spout, packing machines are modern and efficient and weights are accurate and very uniform (Fig. 6). The capacity of these packing units is established by the capacity of the pumps to deliver cement from the storages. The normal time of the filling cycle is seven seconds. Following this is the exhausting period, during which time the package hangs on the spout from one to four seconds, as arbitrarily fixed. The total setting of the machine cycle at Hudson is nine seconds.

The packages are automatically released at the end of the machine cycle and drop onto a Cyclone, wire-mesh conveyor that carries them to discharge tables at either end of the belt (Fig. 7). This wire mesh conveyor delivers a clean, dust-free package to the discharge tables. The conveyor belt is in two sections — packages from the two machines in the unit may be conveyed in opposite or in the same direction. The normal loading operation is the delivery of packages to two cars, one spotted at each end of the belt set to operate in opposite directions.

Under each Cyclone belt conveyor are spill hoppers. Near the discharge tables at each end of the belt a grid is provided over a hopper for emptying cement from broken packages. A right- and left-hand 12-in. spill conveyor delivers the cement from the spill hoppers to the elevator that returns the overflow and the spill to the screening unit located over the surge hopper. An automatic air seal is installed in the discharge spout to the elevator boot. This spill conveyor is operated intermittently as required.

Central Control Station (Fig. 8)

A central routing board located near the pack-house office is an interesting feature of the installation. Colored lights indicate at all times the flow of cement from the stock houses to the three packing units or to the bulk-loading station. An electrically-operated horn at this control station indicates a pre-determined elevation of cement in the surge hoppers.

Bulk-Loading Station (Fig. 9)

The capacity of the surge hopper at the bulk loading station is also 120 bbl. Two flexible rubber hoses convey cement from this twin-spouted surge hopper to cars spotted on the track scale below. This arrangement enables the operator to

(Continued on page 99)

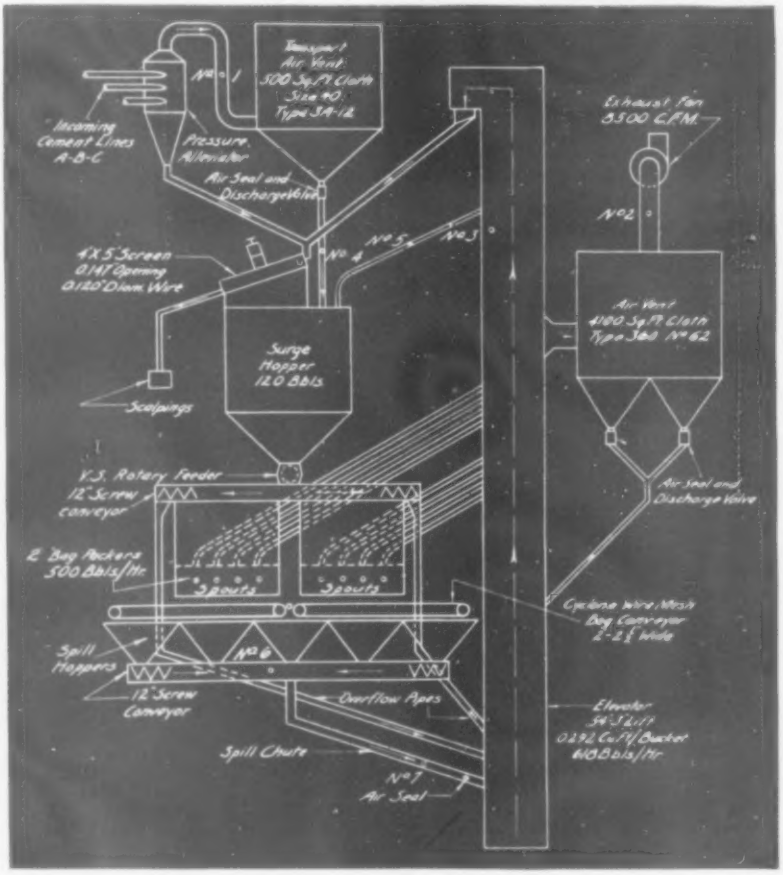


Fig. 2: Cement flow and dust control, showing transport lines, packing units, pressure alleviators, and dust collector

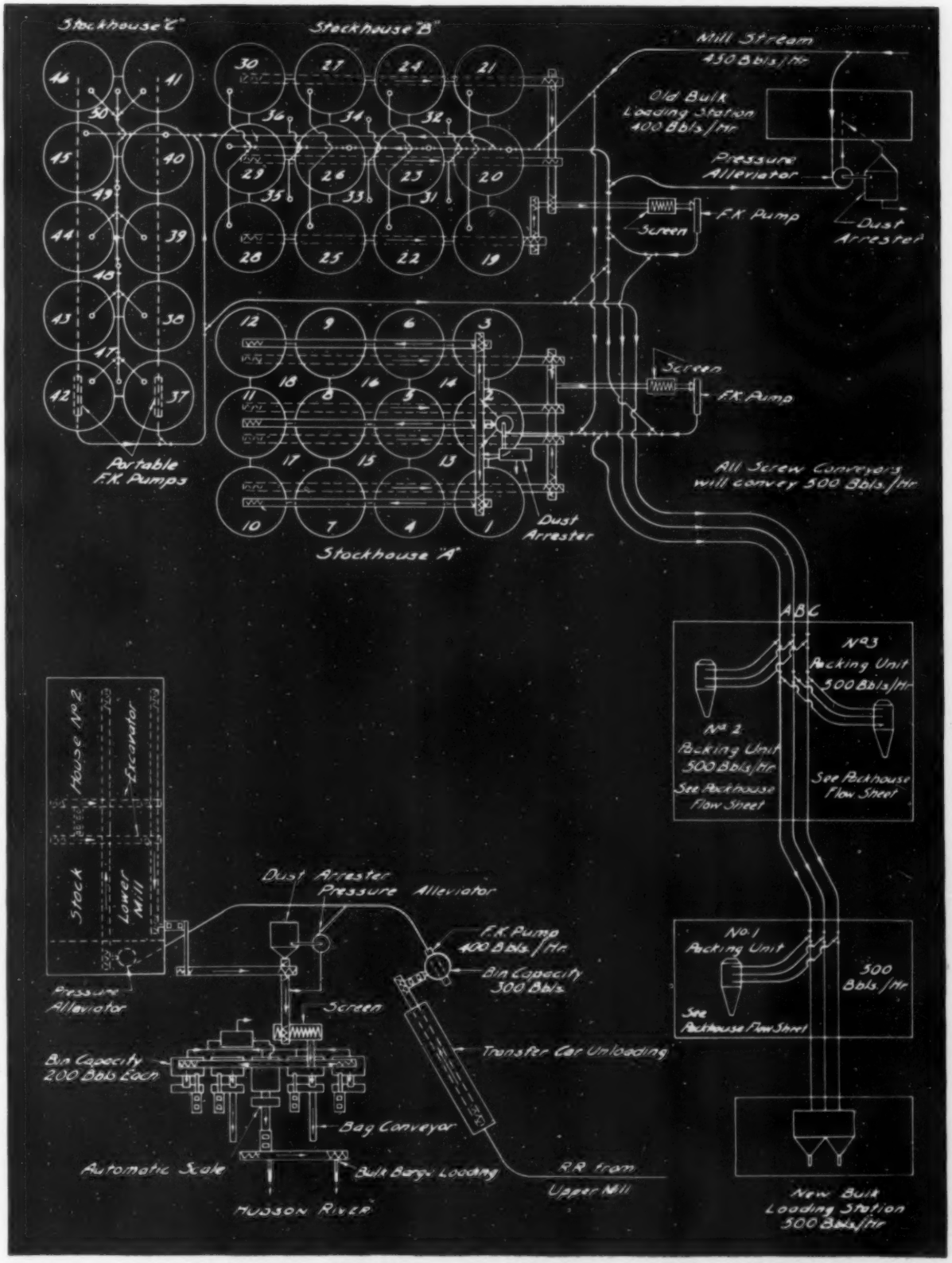


Fig. 1: Cement storage and handling system. Circular bins are arranged in three groups, identified as stock houses A, B and C. Of the 50 bins that make up this storage, more than 40 contain special cement or cement under test. Recovery from the silos in stock houses A and B is accomplished by means of screw conveyors that carry the cement to 8-in. stationary pumps. Stock house C is equipped with two 8-in. movable pumps for draw-off

Control and Collection of Industrial Dust

By E. D. POWERS

PART 1—DUST SETTLING CHAMBERS

E. D. Powers

THE CONTROL OF DUST in industry has, during the past decade, become recognized as essential to efficient operation of an industrial plant. That applies not only to cases where the recovered dust can be utilized or sold, but even when the dust must be handled or further processed before disposing of it as waste. A clean plant is not necessarily efficient, but a dirty one seldom is.

The selection of dust collecting equipment usually depends upon one or several of the following:

(a) Efficiency of collection required, which is usually determined by:

(1) Dust hazard to health.
(2) Dust damage to property.
(3) Value of dust recovered.

(b) Size, shape and specific gravity of dust particles.

(c) Abrasiveness and stickiness of dust.

(d) Temperature, moisture content, corrosiveness and volume of gas.

(e) Initial capital cost.

(f) Operating costs, as follows:

(1) Labor.
(2) Power.
(3) Water.
(4) Repair Maintenance.

Fig. 2: Dust settling chamber shown in Fig. 1

There are many types of dust collectors on the market but the following classifications cover most of those in general use:

(a) Settling chambers.
(b) Low efficiency cyclones.
(c) High efficiency cyclones.
(d) Cloth filters.
(e) Water spray and wet collectors.
(f) Baffle type collectors.
(g) Fan centrifugals.
(h) Electrostatic precipitators.

Settling Chambers

The simplest and least expensive type of collector is the settling chamber, in which the velocity of the dust laden gas or air is reduced to a point where the particles in suspension will settle out of the air stream.

A fused ash dust particle of one micron (one twenty-five thousandth of an inch in diameter) will settle out of suspension in still air (at 15 deg. C.) at the rate of one foot per hour. The specific gravity however, is more important than the particle size. Using fly ash of 1.3 density as an example, the following table gives the approximate rate of fall in still air (15 deg. C.) and the distance travelled when discharged from a chimney 300 ft. high in a 10-mile an hour wind.

Dia. of particles Microns	Tyler mesh	Fall, ft. per hr.	Approx. distance traveled (Miles)
60	230	1669	2
40	325	744	4
20	625	180	17
10	1250	88	69
5	2500	11	276

The above table taken from the Report of the Electricity Commissioners, London, England, November 1932.

Particle sizes of 20 microns and under, are usually classified as fume, and above, as dust. Most dusts cannot be sieve classified below 325-

ROCK PRODUCTS is fortunate in being able to present this series of articles by an author who has had a vast experience in design, construction and operation of dust-collecting equipment of various kinds.

Mr. Powers is the chief engineer of the Welland Chemical Works, Ltd., Niagara Falls, Ont., which is erecting one of the larger war material plants in Canada. His first engineering experience was at the Muscle Shoals plant in Alabama of the Air Nitrates Corporation, built during and after the previous world war. Since then Mr. Powers has been with the American Cyanamid Co., was chief engineer of the Canadian plant of the North American Cyanamid Co.; in 1936 built a chemical plant in South Africa, spending several months in Europe purchasing equipment.

Succeeding articles will discuss all the most used types of industrial dust collectors, and their performances. THE EDITORS

mesh (40 microns), which is the W. S. Tyler Co. standard, and particles below that size are usually graded by elutriation, and compared with standard checking samples.

The above figures indicate the impracticability of settling chambers for high efficiencies or collection of fine dusts. There are some cases however, where the relatively inefficient settling chamber is sufficiently good, particularly when the particle size is large and the specific gravity of the material is high. They can sometimes be used to advantage as a preliminary step for the separation of coarse dust, thereby reducing the dust burden in the air stream before it passes on through more efficient dust collecting equipment.

Fig. 1 illustrates such a condition. The installation is a 100-ton per day (dry process) rotary lime kiln. The flow is counter-current with the dust laden gas leaving at the feed end of the kiln, at which point it passes through a dust-settling chamber, where the heavier particles are deposited before entering the waste-heat boiler and then on through the high efficiency cyclone collectors. The gas enters the bricklined settling chamber at approximately 900 deg. F., sweeping down under the baffle wall, which motion combined with the reduced velocity, separates out a portion of the dust, which settles to the bottom of the chamber. In this installation, the settling chamber collects approximately 3 tons per day. The conditions are as follows:

Fig. 3: Dry dust from the settling chamber is conveyed to a pugging machine where it is wetted before loaded into the dump disposal car

Temperature of gas	900 deg. F.
Volume of gas	42,000 c.f.m.
Velocity of gas entering settling chamber	1,020 f.p.m.
Velocity of gas in settling chambers	330 f.p.m.
Total dust burden	875 lb. per hr.
Dust collected in chamber	262 lb. per hr.
Efficiency of chambers	30 percent

The following is a sieve test of the dust collected:

Plus	20-mesh	9.0 percent
Plus	48-mesh	26.1 percent
Plus	100-mesh	15.2 percent
Plus	200-mesh	13.6 percent
Plus	300-mesh	6.0 percent
Minus	300-mesh	30.1 percent

The dust weighs 49 lb. per cu. ft.

The sieve test of the dust which passes through and is not caught in the settling chamber is as follows:

Plus	20-mesh	0.0 percent
Plus	40-mesh	0.1 percent
Plus	100-mesh	1.0 percent
Plus	200-mesh	6.8 percent
Plus	300-mesh	5.2 percent
Minus	300-mesh	86.9 percent

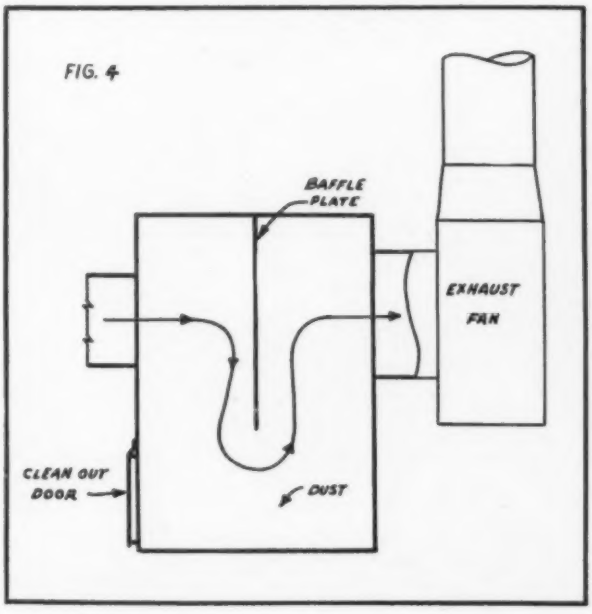
This dust weighs 45 lb. per cu. ft.

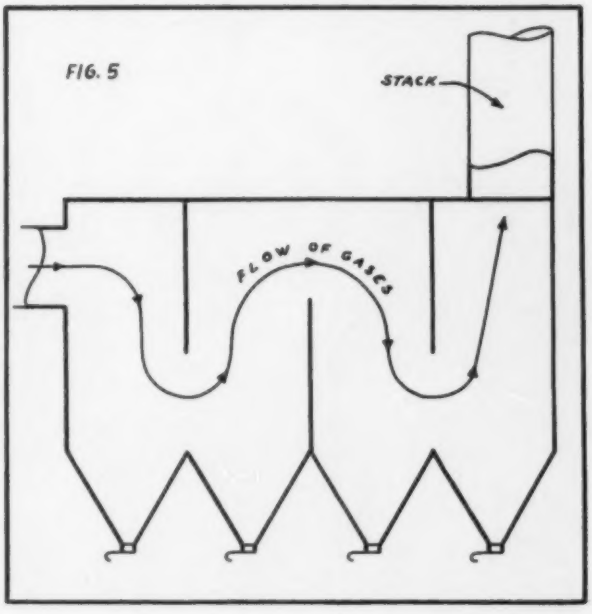
The above is especially high collection for fine dust and indicates a well designed settling chamber.

Fig. 2 is a photograph of the dust chamber shown in Fig. 1. The dust, in this case, is hoed out through the

Fig. 4, left: Shows the application of a baffle type settling chamber used as a temporary expedient

Fig. 5, right: Typical dust-settling chamber design which is suitable for only large, heavy dust particles





door at the bottom of the chamber and removed to the waste disposal in buggies. Since the photograph was taken a pneumatic system has been installed for conveying the dust to a pugging unit where it is wetted and loaded into the dump disposal car shown in Fig. 3.

Advantages of Settling Chambers

(1) Low installation cost.

(2) Low operating cost from viewpoint of power and repair.

(3) No mechanism or moving parts.

(4) Can be used as preliminary separator with more efficient equipment.

(5) Is reasonably satisfactory if all dust particles are large and heavy.

(6) Is not limited by gas temperatures.

Disadvantages

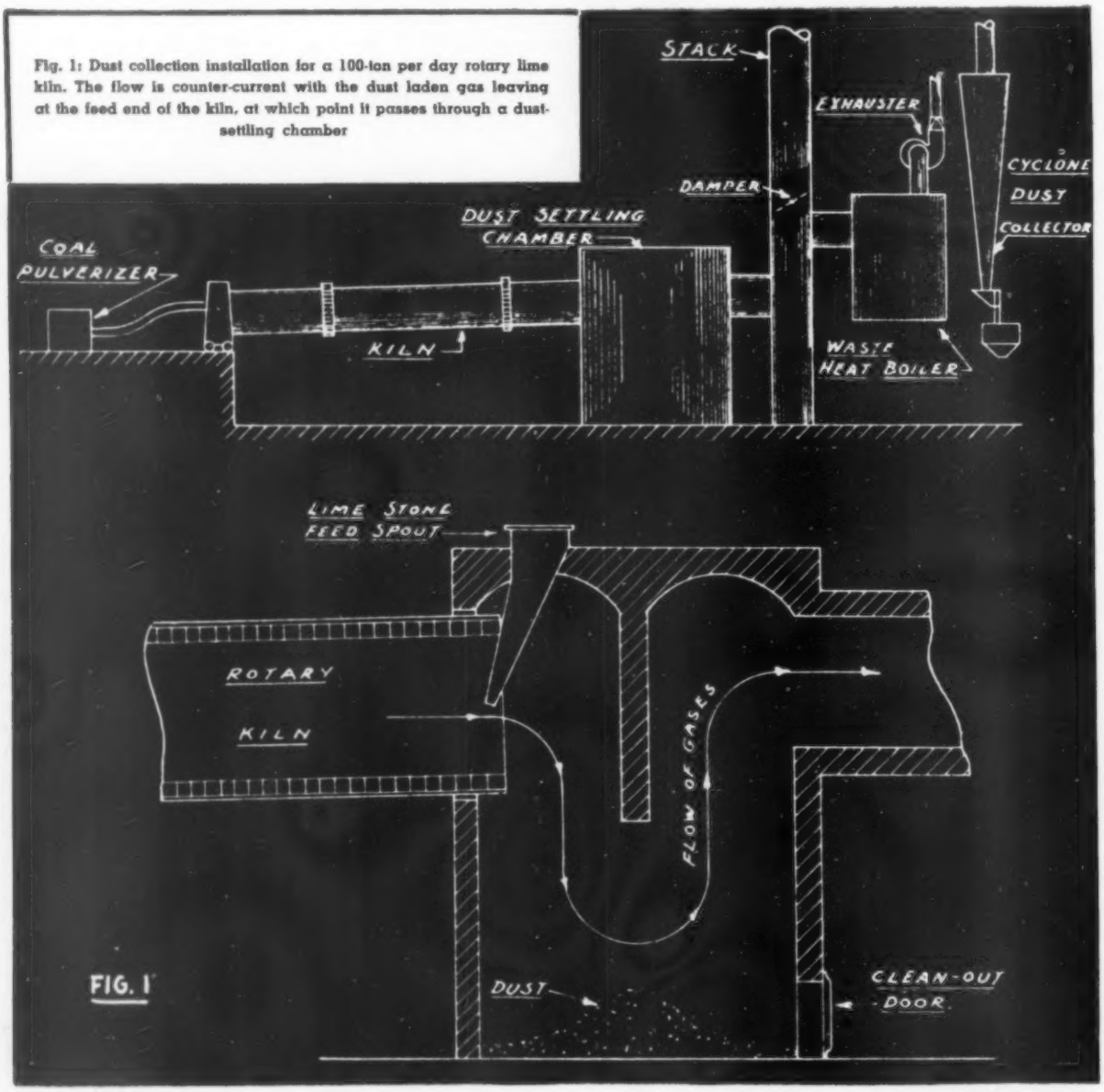
(1) Large volumetric area required and when cost of chamber plus building is calculated, the cost per cubic foot of air treated and the collection efficiency considered, this type of collector is sometimes not inexpensive.

(2) The collection efficiency is usually so low that the operation is not satisfactory unless used in conjunction with other more efficient equipment.

Various designs of settling chambers can sometimes be used for temporary installations, or in emergencies. In one of our experimental plants it was necessary to handle a moist gas carrying a very heavy dust burden in a high speed fan. The accumulation on the blades soon threw the rotor out of balance, creating a dangerous condition. As a temporary expedient, a baffle type settling chamber as illustrated in Fig. 4 was installed, which permitted operation of the plant. Fig. 5 shows a typical dust-settling chamber design which is suitable for only large, heavy dust.

(To be continued)

Fig. 1: Dust collection installation for a 100-ton per day rotary lime kiln. The flow is counter-current with the dust laden gas leaving at the feed end of the kiln, at which point it passes through a dust-settling chamber



To the left, new stone plant of the Ohio Marble Co., and to the right, may be seen the pulverizing plant

Selective Quarrying

Diversified production of many fine products and large tonnages of fluxstone

At the Ohio Marble Co plant, operated by the Piqua Stone Products Co., Piqua, Ohio, the quarry is in a limestone ledge that lends itself to selective operation. Most of the production, in a new plant of 200 to 250 tons hourly capacity, is flux stone, but road stone has become an important product and certain strata are quarried especially for making various pulverized products where whiteness is a requisite. Among these products are stone pulverized for mineral feeds, poultry grits, paint fillers, special concrete aggregates, roofing, asphalt filler, rubber manufacture and Whiting.

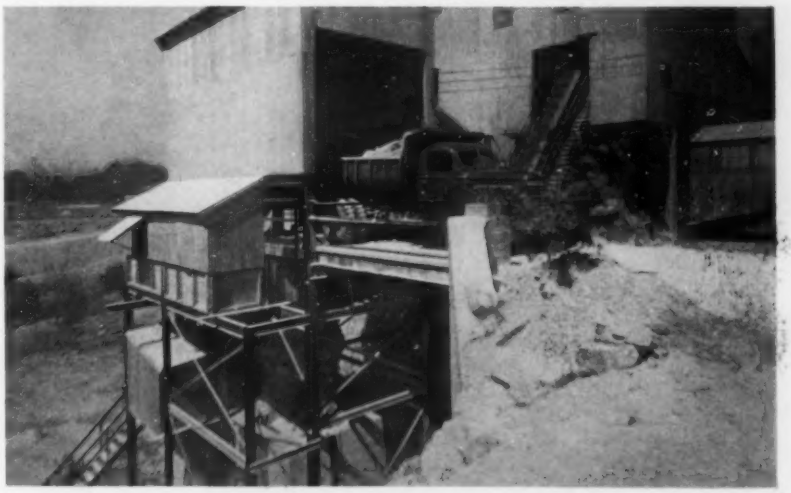
The main stone deposit is typical central Ohio limestone running 85- to 88-percent $CaCO_3$, that has thin, fractured strata overlaying more blocky to solid rock farther down. It is covered with up to 15 ft. of top soil that is loaded into trucks by a 1¼-cu. yd. Marion 450 gasoline-electric shovel for disposal in the worked-out sections of the quarry. Directly underneath the overburden and overlaying a softer stone quarried for flux stone, is an 8- to 9-ft. layer of hard cap rock which is being processed separately for road stone.

Drilling and Blasting

The working depth of softer stone is 25 to 30 ft. Drilling for the primary shots is done by a 6-in. Bucyrus-Armstrong gasoline well drill. Holes are drilled 12 to 14 ft. apart and from 14 to 16 feet back from the quarry face, the exact spacing and burden depending upon the location and the toughness of the bottom stone. Holes are normally drilled from 1 to 2 feet below the quarry floor. Because of the closeness to the city shots are made in single rows of 20 holes to the maximum shot.

Either 5- or 5½-in. diameter dynamite cartridges are used. Average loading per hole is 125 to 175 lb. of dynamite. Due to water conditions frequently encountered and the toughness of the bottom ledges, the bottom half or two-thirds of the charge is 50 or 60 percent gelatin dynamite and the balance of the load is of low density dynamite. Under normal conditions no deck load is used. All blasting is now done with electric blasting caps and a hand-operated blasting machine. At some locations in the quarry, the stone fractures well and does not require much secondary shooting. In other parts of the quarry where the rock is more bulky, extensive secondary blasting is required. Drilling for this is done by Ingersoll-Rand and Sullivan jackhammers driven from a Chicago Pneumatic portable air compressor.

Stone is loaded by two 2-cu. yd. Marion electric shovels into trucks that haul 7 or 8 tons to the primary crusher. Five G.M.C. trucks and one White truck, with Galion bodies and hydraulic hoists, are in service. The average length of haul is 1½ miles round-trip to the crushing plant.



One of the four special trucks which haul about eight tons to the load from the quarry and dump into the primary crusher

POWER

Diesels Cut Dredge Costs

Increase speed of operations, reduce fire hazard, cut fuel a third, and lower maintenance by changing to Diesels

By ORVILLE ADAMS

ONE OF THE MOST important applications of the Diesel engine in the rock products industry is the use of these engines for the operation of sand and gravel pumping and tow boat propulsion. Typical of such installations is that of the Union Sand and Gravel Co., Morganfield, Ky. This company operated a gasoline engine on its dredge, which was destroyed by fire, started, it is reported, from gasoline. The present dredge, built in October, 1938, is powered with a Cummins Model HP 601 Diesel engine.

The wood hull is 24 by 74 ft. by 42 in., equipped with a Holtz 8-in. centrifugal gravel pump; it has a covered, flush deck. The dredge has a production capacity of 125 tons of solids per hour, which is usually 100 tons of sand and 25 tons of gravel; the proportion, however, is determined by the location worked.

The pumping is usually done from depths of 12 to 30 ft., with an 18-in. vacuum. The static head to the screens mounted on the hull is about 50 ft. Both the suction and discharge lines are 8-in. diameter.

The pump discharge is fed by gravity downward over stationary screens. The oversize material is chuted over the port side of the boat. Material passing the screens is chuted over the starboard side of the boat into barges alongside. When either product only is desired, the other is wasted.

The screens are made up of five sections, the top two being ⅜-in., and the bottom three are ¼-in. Each of the 48- by 50-in. sections are removable and interchangeable to suit the graduation of the material as desired. The hull is divided roughly into two parts. The forward room or work room, housing the pump, engine and other stationary machinery, is 26 ft. long. At the rear of the work room is the spacious crew quarters, measuring 28 ft. by 20 ft. wide, fully equipped with conveniences.

Power Application

The method of power hook-up is interesting. The power is taken from both front and rear of the engine. The rear end drive through the clutch and outboard bearing carries a 13.4-in. V-belt sheave. This is connected with six "D" belts, 180 in. long, to a 40.2-in. sheave on the gravel pump. The pulleys thus give a 3 to 1 speed reduction that turns the pump 400 r.p.m., the engine r.p.m. being 1200.

Engine cooling is done with a gear type water pump which circulates river water. A standard Lunkenheimer spring loaded valve is set in the by-pass line to permit by-passing the water when the thermostat closes.

The 2¼-in. diameter by 3-ft. long shaft from the front power take-off is supported by a pillar-block outboard bearing mounted on timbers. This shaft, which can take the full horsepower output of the engine, has mounted on it three different power take-off pulleys. Starting from the engine, the first 8-in. diameter pulley drives to a 6-in. diameter pulley on a Gardner-Denver centrifugal water pump. The centers are 3 ft. and the power is transmitted by a 4-in. wide belt. This pump has a 2-in. intake and a 1½-in. discharge, and is used to pump water over the sand and gravel washing screens.

The next pulley on the drive shaft is 6-in. diameter. From it a 2-in. wide flat belt is used to drive a 4-in. pulley on a small generator for lighting. A third pulley on the drive shaft is 6-in. diameter and provides power for the hoist. An 8-in. flat belt transfers the power to a 28-in. pulley on the hoist drive. The centers are 5 ft. The hoist drive consists of a 6-ft. shaft with an 8-in. wheel on its far end, which friction drives the cable drums. The hoist cable operates through a double- and triple-sheave on the boom, and provides a line pull of approximately 60 ft. per min.

The arrangement has been found

The Milburn B. operated by the Union Sand Gravel Co., is powered by a Diesel engine

Diesel-powered dredge boat has a production capacity of 125 tons of solids per hour, which is usually 100 tons of sand and 25 tons of gravel

to be efficient and flexible, and operates very satisfactorily.

The engine shown is without radiator or hood. The power cost per ton is very low, approximately 1/3c per ton. The engine consumes about 3 gal. per hour, and costs 7c per gal. The lubricating oil, which costs an average of 50c per gal., is changed every 75 hours, and none is added between changes. The engine therefore operates much more economically than the gasoline engine formerly used, and production has been increased more than 50 percent over the former dredge with the gasoline-engine power. There has been practically no maintenance cost, so far, except filter bags for the lubricating oil filter.

Dredge Tender

The dredge tender, known as the *Milburn B* is also Diesel powered with a Cummins engine, a Model HI-400, operating at 1350 r.p.m. The tender is 65 by 12 ft. and is driven by a stern wheel 8 ft. in diameter and 10 ft. wide, having twelve 14-in. bucket boards. The wheel turns 33 r.p.m., and has full pilot house control. The tender is wood construction throughout and was built in 1922.

The engine is also the open cooling system, the cooling water pump circulating river water picked up in a well or pipe 6 in. in diameter, and 3 ft. long mounted in the center of boat near the engine. The system also uses a Lunkenheimer ¾-in. spring-loaded valve, which after being manually set, controls the amount of water circulated through the by-pass in the engine. This engine on the tender was installed in May, 1940.

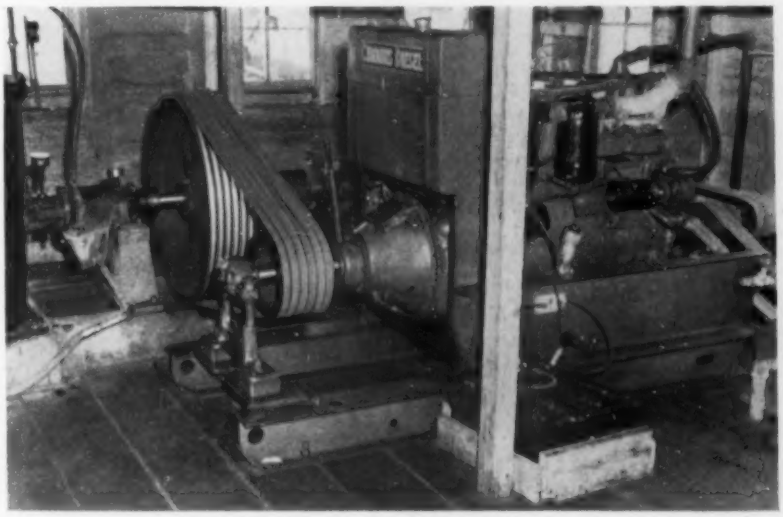
The tender works with the dredge transporting it from one location to another. It also is used to move empty and loaded barges to and from the dredge. It pushes one to four barges, each of which weighs 250 tons loaded. The speed loaded is 4 miles per hour, and free speed 10 to 11 miles per hour.

Low Operating Cost

This engine uses only 2 gal. of 7c oil per hour for fuel, and lubricating oil costing 50c per gal. is changed every 75 hours, with none added between changes. The gasoline engine formerly used and replaced by the Diesel consumed 6 gal. of gasoline per hour, and so much lubricating oil that, it is said, the oil was never changed, since the make-up oil kept it fresh.

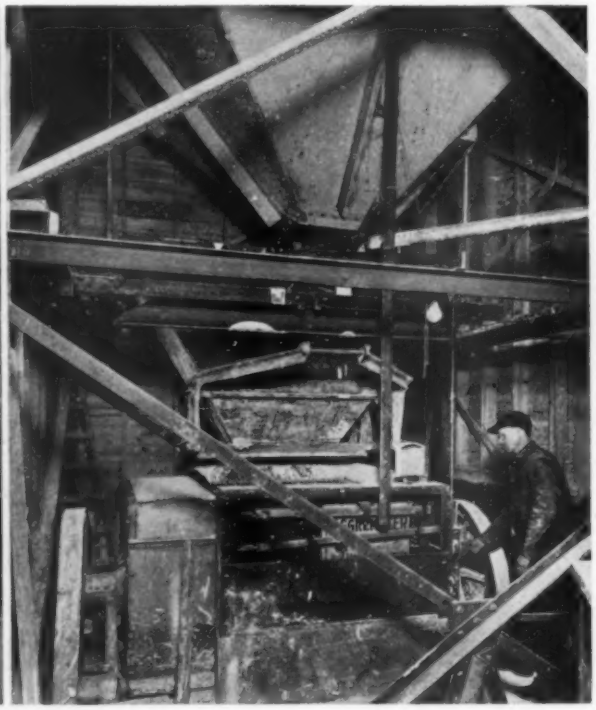
The installation of this Diesel on the tender is very interesting. It is mounted on a pair of timbers 6- by 8-in., by 8 ft. long. These timbers rest crosswise on the two longitudinal kelsons, size 12- by 6-in., which extend the length of the hull. The engine is mounted on the forward end. There is a 35-gal. fuel tank, placed on the forward deck, with 6-ft. gravity feed between it and the engine. The engine exhaust extends vertically from the front end of the manifold.

(Continued on page 98)



Diesel engine on dredge. Power is taken from both front and rear of the engine for maneuvering the hull and for the operation of pumps, lighting generator, etc.

LIME PUTTY



Above, left: Central mixing unit with one of the nine modern International and Autocar lime putty trucks receiving a load. The cab-over-engine trucks have bodies made to the lime company's own design which comprise rounded-bottoms, splash plates at the top, and steel angle baffle plates to prevent splashing on steep grades. Right: Closeup of AggreMeter and Blystone mixer to accurately weigh out and mix lime putty and sand. The sand is dumped into the weigh hopper through a mechanically operated gate and the putty is pumped into the top of the hopper through a 4-in. line by a pump controlled from the operating platform. After the mortar is mixed, it is dropped into a loading hopper or directly into a waiting truck

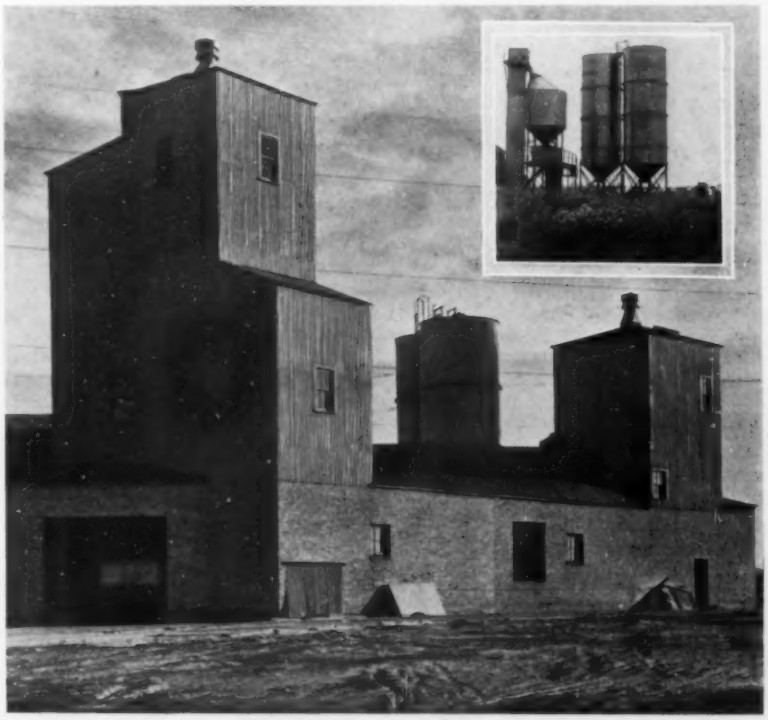
Left: Ageing tanks, each of which are equipped with an 18-in. diameter filter that extends the entire length of the tank in the center. Filters are kept closed until a short time before putty is to be used from the tank. The valves on the bottoms of the filters are then opened and the excess water drawn off so as to give the putty the proper consistency when mixed with the sand to make mortar

LIME PUTTY

LIME PUTTY is being introduced by the Rockwell Lime Company to the Chicago market as a scientifically designed product made in a modern plant. The Brooks-Taylor process is used, and most of the tanks and equipment were furnished by the Chicago Bridge & Iron Co. Illustrations on the facing pages show various features of the plant.

It is a low-leg type plant with the aging tanks elevated only enough so that a flexible metal hose can be connected to the cone-bottom and the contents pumped either to a central mixing plant or to trucks. The Rockwell Lime Company receives bulk crushed quick-lime from their own lime plant near Manitowoc, Wis. Lime is shipped to the putty plant in box cars which are unloaded into the boot of the elevator on the lime bin. A high-magnesium content lime is used.

(Continued on page 96)



Right: New lime putty plant. Inset shows ageing tanks and other equipment before the plant was enclosed

Below: Airplane view of Rockwell Lime Co. buildings. New lime putty plant is shown in the foreground

Removing Alkalis By Heating With Admixtures

By HUBERT WOODS*

SYNOPSIS

A good deal of interest has been aroused by the finding that certain aggregates give rise to expansive reactions with the alkalies in portland cement. It is not yet clear what these aggregates are, and there is a tendency to assume that any reaction between aggregates and cement is bad. It is very questionable, if not definitely incorrect, to proceed on this assumption. A more likely assumption is that most aggregates react chemically with one or more hydration products or constituents of portland cement, and that in the large majority of cases this reaction does not give rise to expansion, but is beneficial in promoting bond with the aggregate and perhaps in other ways. But this does not permit the manufacturer of portland cement to put the matter aside; there probably are cases in which low alkali cement should be used, and the problem of making it economically is therefore of considerable importance.

The most obvious solution is to use raw materials which will yield low alkali clinker when burned in the usual manner. This may be the most economic solution for some plants, but not for others. Possibly somewhat harder or prolonged burning, with or without some change in raw materials, may be effective at some plants. Another possibility is that of adding to the raw materials some substance which will promote the volatilization of alkalies during the burning process. This paper reports the results of tests made in this connection.

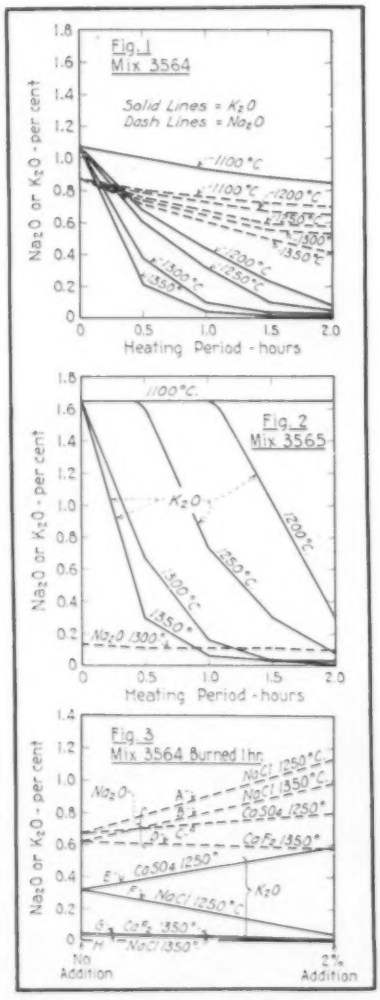
AT THE TIME of the first World War a great deal of effort was expended in devising means for obtaining potash as a by-product of cement manufacture. In fact, in some instances, the potash so obtained was so valuable that it was the primary material and cement the by-product. Interest was in potash almost exclusively, at least with respect to volatility of alkalies; soda was merely a nuisance which interfered with subsequently refining operations, and if it did not volatilize at all, so much the better.

At the present time our interest is in both alkalies, and because soda is much more difficult to volatilize than potash, it may well be that our main interest should be turned to soda. There is very little information available as to the effect on volatilization of soda of various chemicals added to the raw mix. For these reasons, a series of tests were made designed to show the relative amounts of soda and potash driven off two dissimilar cement raw mixes when these mixes were heated at various temperatures for various times, and another series of tests to determine the relative effects of a few chemical additions.

Experiments

Mix No. 3564 contained 1.07% K_2O and 0.88% Na_2O, expressed on the loss-free basis. Mix No. 3565 contained 1.65% K_2O and only 0.13% Na_2O, on the same basis. The limestones and clays or shales entering into these two mixes were from widely separated deposits and, insofar as the clays or shales are concerned, were of quite distinct geologic origins. Charges weighing 35 grams were placed in platinum boats and heated in a gas-fired laboratory furnace at temperatures from 1100 to 1350 deg. C. (2010 to 2460 deg. F.) for periods of time varying from one-half to two hours. The charges containing admixtures were all heated for one hour only, at either 1250 deg. C. or at 1350 deg. C. (2280 deg. F. or 2460 deg. F.) or both. It is our belief that one hour's heating at 1250 deg. C., in the laboratory furnace results in driving off just about the same proportional amounts of alkalies that are driven off in the normal operation of our plant kilns. The products were analyzed for K_2O and Na_2O, with the results shown on several plots.

Fig. 1 shows the effects of time and temperature of heating on the alkali content of Mix 3564. In most of these plots, the solid lines represent data for potash, and the dashed lines represent data for soda. This figure shows that at 1100 deg. C. (2010 deg. F.) heating up to two hours does not have any very large effect on either potash or soda, although, to be sure, the effect is noticeable on both. Higher temperatures, from 1200 to 1350 deg. C. (2190 to 2460 deg. F.) have very large effects on potash, so that at any of these temperatures the potash is reduced in two hours from the original 1.07% to less than 0.1%. Even in a half-hour, substantial reduction of potash is effected at these temperatures, especially the higher ones.



Figs. 1 to 3: Alkali content of clinker as affected by heat treatment and by additions to the raw mix (Fig. 3)

In contrast, the effects of these various treatments on the soda content are relatively small. Starting out at 0.88% soda, there is still 0.41% after two hours at 1350 deg. C. (2460 deg. F.).

Fig. 2 shows similar results for Mix No. 3565. Most of the data here are for potash only, as the soda content was so low as to preclude reasonable percentage accuracy in analysis. However, the soda curve for 1300 deg. C. (2370 deg. F.) is given as the data seemed to warrant it. This mix seems to behave somewhat differently, with respect to reduction in potash, from the first mix considered. At 1100 deg.

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C. (2010 deg. F.) we found no loss of potash up to two hours. At 1200 deg. C. (2190 deg. F.) there was no loss up to one hour, then considerable loss between one and two hours. At 1250 deg. C. (2280 deg. F.) no loss is apparent up to half an hour, with rapid loss thereafter. The question arises whether these peculiarities are real, or whether they may be due to errors. It will not be maintained that these results are significant, except to point out that the same phenomena take place not only once but three times, at three different temperatures, and that this may indicate a real "lag effect." In other respects, these curves show substantially the same thing as was shown for the first mix, namely, that potash is greatly affected by time and temperature of heating, and that temperatures of the order of 1350 deg. C. (2460 deg. F.) will drive out comparatively large amounts of potash at relatively short periods.

Fig. 3 shows the effects of adding 2% of several chemicals, separately, to Mix 3564, prior to heating. The heating period in all cases was one hour, but two temperatures, 1250 and 1350 deg. C. (2280 and 2460 deg. F.) were employed. The upper, dashed lines all pertain to soda; the lower, solid lines to potash. Calcium fluoride lowered the soda only a little, at 1350 deg. C. (2460 deg. F.). The burned charge containing calcium sulfate contained more soda and much more potash than it would have had in the absence of the admixture (lines C and E). This effect of calcium sulfate confirms what was already known regarding its retarding effect on the volatilization of potash. Addition of sodium chloride was tried because it had been suggested that although it would contribute sodium, the chloride might in some way act to bring about a net reduction in total soda. Although its effect in reducing potash

CHEMIST'S CORNER

Problems and practices of the chemists in the industry are discussed on these pages. Contributions and comments are invited.

was very large, as shown by line F (and it was used for this purpose during World War 1), it nevertheless resulted in large increases in soda content (lines A and B).

Fig. 4 shows similar results for Mix 3565. Again, calcium sulfate inhibits volatilization of potash (line A). It seems to have lowered the soda a trifle (line E), but as this mix contained very little soda, the data are not very significant. Sodium chloride greatly decreases potash, but adds about as much soda (lines B and C). Calcium fluoride does not seem to have done much of anything (line D).

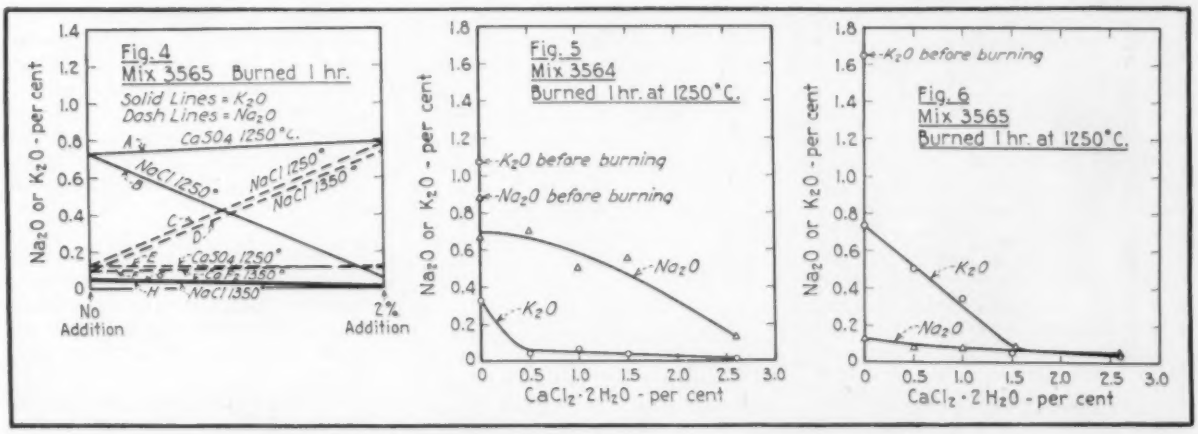
The results shown in these last two figures may be summarized by saying that none of the additions so far discussed is of much value in lowering total alkalies, under the conditions of these tests. In the case of calcium fluoride, we have a little full scale plant data which might be taken to modify this statement. In making high early strength cement, fluorspar was added to the raw mix, with the result that the clinker had considerably less potash than normally, but the soda remained about where it had been without fluorspar. Possibly a mix which contains practically no soda, or very low soda, but which contained much potash, would benefit materially by the addition of fluorspar. Since Mix No. 3565 is low in soda, it is unfortunate that we do not have data for that mix on the effect of fluorspar at 1250 deg. C. (2280 deg. F.). At 1350 deg. C. (2460 deg. F.) the potash is low even without any admixture.

Calcium chloride has long been known to increase the volatilization of alkalies from cement raw mixes, so a somewhat more extensive series of tests were made with that material. Fig. 5 shows the results of adding to Mix 3564 various quantities of the dihydrate from 0.5% to 2.63%. All burns were at 1250 deg. C. (2280 deg. F.) for one hour. At 1.07% and 0.88% on the vertical scale are shown the original amounts of potash and soda, respectively, before burning, on a loss-free basis. At 0.32% and 0.67% are shown the potash and soda contents after burning in the absence of any calcium chloride, and these latter points really constitute the origins of the potash and soda curves shown on the diagrams. With this mix and under these conditions, 0.5% addition drives the potash down to a very small value, but has no appreciable effect on soda. In fact even 1.5% addition has only a moderate effect in reducing soda, but 2.63% addition is very effective. The analytical data for soda are somewhat scattered, but the curve shown is probably a reasonably correct trend.

Fig. 6 shows similar data for Mix 3565. At 1.65% is shown the potash content before burning, on the loss-free basis, and at 0.73% the potash content after burning without admixture. With this mix the potash appears not to be so easily driven off by small additions of calcium chloride as was the case with Mix No. 3564, but 1.5% addition got rid of most of it.

Conclusions

With these two mixes and under the test conditions employed the following conclusions seem warranted



Figs. 4 to 6: Effect of heat treatment and additions to raw mix on alkali content of clinker

with respect to chemical additions to tne raw mix.

1. Calciulm sulfate retards volatilization of both potash and soda.
2. Calcium fluoride does not aid materially in volatilizing soda.
3. Sodium chloride has a large effect in expediting the volatilization of potash, but actually increases the soda content materially.
4. Calcium chloride additions lower both soda and potash, but the effect appears to be much stronger on potash than on soda. With one mix 0.5% of the dihydrate was sufficient to cause most of the potash to leave, but with the other mix which was originally higher in potash, 1½% was required. Additions up to 1½% were only slightly effective in lowering the soda content of one of the mixes, but 2.63% was very effective. This quantity is probably beyond a reasonable economic limit.

Volatilization of Alkalies in Cement Plants

Some data from actual plant operations, not involving additions to the raw mix, may be of interest. These data were obtained from eight different plants, four using the dry process and four using the wet process. The alkalies were determined in the kiln feeds and in the clinkers, and the percentage volatilizations were calculated. It is obvious that the proportions of soda and of potash lost in burning vary widely from plant to plant, but it is always true that the proportion of potash volatilized is higher than that of soda. It is also evident that for both alkalies, the average volatilization is higher for the dry process plants than for the wet. It appears that for Plant E the data for soda are probably unreliable, and the average does not include these data. Even without them, the low average volatilization of soda in wet process plants is striking. It is, of course, impossible to say whether the wide variation in volatilization from plant to plant in the same process class is solely a result of different operating practices or kiln design, or whether it is due to an inherent difference in the characteristics of the raw materials. In view of other evidence given in this paper, it does seem that different raw materials can behave differently with respect to loss in alkalies during burning even though time and temperature are constant. It is also known that operating practices and kiln designs are by no means standardized, to say the least, so in all probability both these factors have to be taken into account. Another factor may be the fuel used. Coal could contribute some alkalies, whereas gas and oil would not do so. Both coal and non-coal burning plants are included in both wet and dry classes of the table.

VOLATILIZATION OF ALKALIES IN ROTARY KILNS

Plant	Material	%Na_2O (Loss Free Basis)	%K_2O (Loss Free Basis)	Percent Volatilization Na_2O	Percent Volatilization K_2O
		Dry Process Plants			
A	Feed	0.43	0.82		
A	Clinker	0.30	0.48	30	41
B	Feed	0.30	1.07		
B	Clinker	0.17	0.50	43	53
C	Feed	0.78	0.87		
C	Clinker	0.47	0.18	40	79
C	Feed (a)	0.46	0.66		
C	Clinker (a)	0.19	0.13	59	80
H	Feed	0.47	1.12		
H	Clinker	0.40	0.56	15	50
	Average Volatilization			37.4	60.6
		Wet Process Plants			
D	Feed	1.67	0.57		
D	Clinker	1.13	0.10	32	82
E	Feed	0.46	1.21		
E	Clinker	0.51	0.74	—11(b)	39
F	Feed	0.33	0.79		
F	Clinker	0.29	0.62	12	21
G	Feed	0.36	0.85		
G	Clinker	0.33	0.33	8	61
	Average Volatilization			17.3	50.7

(a) A different type of mix.
(b) Omitted from Na_2O average.

It May Be Legal But— It Isn't Right

CALAVERAS CEMENT CO., San Francisco, Calif., recently put up a deposit of $1342.80 with the California Reclamation Board for a right-of-way for the construction of a natural gas line under State lands. When the permit was denied, the Attorney General ruled that the reclamation board could not return the money, but the cement company would be required to put in a claim for the money to the California Board of Control.

China and Nicaragua Building Cement Plants

AT WENCHUN (Manchuria), China, there has been opened a new cement plant said to have an annual capacity of 150,000 metric tons. It is equipped with machinery imported from Germany. Manchurian cement production in 1940 was reported to be 25 percent below the quantity expected, mainly because of a coal shortage, according to a Bureau of Mines report.

A cement plant is now nearing completion in Nicaragua, Central America, and it is expected that operations will start early in 1942.

Permanente Building Port Facilities

PLANS for a $300,000 expenditure at the Port of Redwood City, Calif., were announced recently by the Permanente Metals Corp., which at the same time was revealed to be the successor to the Permanente Corporation, operator of the cement plant and magnesium factory near Los Altos, Calif., according to a local newspaper report.

To Prefer Local Cement

NEBRASKA cement manufacturers will get "preferential consideration" when contracts are awarded for the $25,000,000 bomb loading plant near Wahoo, Nebr., said Senator Norris of Nebraska in a recent newspaper report. It is also stipulated that the defense orders will be distributed to as many producers within a region as is practicable.

Jamaica Cement Project

A REPRESENTATIVE of the British Cement Manufacturing Board is understood to be investigating the possibility of establishing a cement plant in Jamaica.

Cement is not produced in Jamaica, although an abundance of limestone and clay suitable for its manufacture occur on the island.

Shipments of cement from the United States to Jamaica amounted to only 51 barrels in 1940 and to but 10 barrels in the first quarter of 1941.

Adding Two Dryers

SANTA CRUZ PORTLAND CEMENT CO., San Francisco, Calif., is now installing two new dryers at its Davenport plant. There will be four dryers when the new units are installed. Eight silos are being built for the storage of rock. Present output is about 7000 bbl. daily.

Moving Mountain to Mill

(Continued from page 47)

The rock crushes and grinds very easily, and this helps offset the extra cost of haulage above that from the original quarries. A ten-mile right-of-way was secured, and a highway built between the quarry and the loading dock. Careful attention was given to establishing as uniform a grade as possible, and to limiting the maximum grade to two percent. This was all accomplished, except for a very short distance at the quarry entrance. A compressor and tool house of concrete construction was erected at the quarry, and a fuel oil service station, with an enclosed yard, was built at the loading dock.

The loading dock is of sufficient length to permit the loading of a seven car train, without shifting the cars. A switch, parallel with the loading dock, allows the locomotive, with its train of seven cars, to pass the loaded cars, then pick them up, and leave the empty cars, all in a single operation. The 10 miles of roadway is paved throughout the entire length, and the trucks operate at a maximum speed of about 45 miles per hour.

In addition to the three model L.M.S.W. six-wheel, four-wheel drive Mack trucks, three Fruehauf heavy duty, special tandem axle, walking beam type semi-trailers, 18 model ST-94-35 Heil 15-ton single-cylinder, telescopic hydraulic hoists, which were purchased this year for the Reserve Quarry operation, the company also has added to its quarry equipment one No. 29-T Bucyrus-Erie blast hole drill, one No. 12 Bucyrus-Erie bit dresser, and a 2½-cu. yd. Marion Type 4101 electric quarry shovel.

The Mack tractors have SW30 "boggie" or dual drive, rear ends. In combination with the transmission, 10 speeds are available in a single gear box. Tractors have a wheelbase of 191 in., and they are powered by Cummins HB-6 Diesel engines.

Semi-trailers furnished by Fruehauf have dual axles. The frame is 278 in. long, 9 in. deep over the tractor axles and 12 in. deep rearward. Two outriggers under each body provide a cradle. These extend 29-13/16 in. beyond the frame on the dumping and 35-5/16 in. on the closed side. Back of the cab and over the transmission of the tractor is a steel decking ¼-in. thick, supported by 4-in. I beams as a safeguard against falling rock. The overall wheelbase is 383½-in., and the overall length is 466½-in.

Each of the three dump bodies or skips is 10 ft. 6 in. long, 7 ft. wide and 45 in. high. These units have an 8-cu. yd. water level capacity. Construction is of steel with a corrugated bottom lining. As the dumping end is open, the bottom slopes upward to the lip to prevent spillage.

Unladen weight of the combination (tractor and semi-trailer) is 49,040 lb.; tractor, 21,170, trailer 27,870.

Power for the Reserve Quarry is furnished by an overhead pole line carrying three ¼-in. stranded copper cables for an 11,000-volt, 3-phase, 60-cycle circuit.

Transformers at the quarry furnish 2200, 440 and 110-volt current for the various units.

The compressor, which furnishes air for the jack hammer drills, is an Ingersoll-Rand two-stage, air-cooled, type 40 motor compressor.

Employes Welfare

(Continued from page 40)

At the Mason City, Iowa, plant a new change house has 250 steel lockers, with four wash fountains and nine showers. Except for the arrangement, it is equipped similarly to the Iola plant. A 1265-ft. deep well furnishes drinking water throughout the plant. There are three garages for employes' cars, one of which is the completely enclosed old power house building.

At this plant and at all other Lehigh plants, conditions permitting, the company makes available to those employes who want them, a 50 x 150-ft. garden plot on which the employes can raise their own vegetables.

The Lehigh Portland Cement Co. has established at all of its plants well equipped hospital rooms and adequate industrial medical service by following closely the regulations of the American College of Surgeons. At each plant there is a company physician who makes regular visits to the plant and is subject to call at any time.

Allentown Office

In addition to the expenditures for bettering mill working conditions, the company has invested $500,000 in the construction of a new building at its headquarters in Allentown for the comfort of employes and the coördination of the work. This building is a seven story concrete, fire-proof brick structure known as the "Young" Building, with 39,000 sq. ft. of space, and is air-conditioned throughout. Its facade features the use of poured architectural concrete, and photo-murals to illustrate uses of concrete fit into wall areas in three reception rooms and in the directors' room. The illustrations show some of the conveniences and ideal working conditions for office employes. The Young building is equipped with a complete First Aid room, a library for the use of all employes.

Conveyors

(Continued from page 53)

Where a belt feeds another belt, or a machine in a continuous process, it is important that it be protected from a sudden shut-down ahead of it, which would choke the discharge chute. This protection is accomplished by electrical interlocking between all machines so that in case of such a shut-down, all preceding machines are automatically stopped. Motors must also be electrically protected against over-load, power failure, etc., by the usual devices. Mechanical hold-backs are required on inclined belts in conjunction with these devices. These may be the solenoid brake, the ratchet, or the silent cam type. The proper selection of a belt for a conveyor will be discussed in full later, but we wish to mention it here as being another factor in the ultimate cost of the operation of a belt over which the operator has no control.

A conveyor to be installed in an existing building or structure may present difficulties to the designer which cannot be overcome, such as limited clearances, head room, and space available. The result is a crowded belt, steep incline, poor chutes, or otherwise inadequate features which affect the operation costs. A belt which is operated intermittently will show a greater cost per unit carried, due to the fact the belt is deteriorating from age alone. A belt which is alternately wet and dry will prove to be an expensive one because of mildew and rot in the carcass. Intermittent use is often combined with wet and dry conditions, a combination which is especially destructive.

It is often impossible to erect the most efficient conveyor possible for a given purpose when inadequate funds are available for investment. When an owner asks for "as cheap a conveyor as possible" he must realize it may be cheap in first cost only and be less economical in the ultimate unit cost for carrying material over a more expensive design. So, if it is at all possible for the owner to give the designer a free hand to select the most economical equipment for the intended life of the conveyor, he should do so.

(To be continued)

NEW EQUIPMENT

Variable Speed Transmission for V-Belt

STANDARD TRANSMISSION EQUIPMENT Co., Los Angeles, Calif., has developed what is known as the J FS-CUB V-

Easily adjusted variable speed control for V-belt applications

Belt speed control. It has been especially designed for all "A" section V belt applications and for speed ranges up to 3.3-1. Smooth sided pulleys are used rather than the interlocking type.

Among the advantages claimed are: the patented positive belt alignment feature which makes possible the mounting of this speed control unit in any position without impairing function or throwing belts out of alignment; machined and balanced cast iron construction, forced lubrication of the special bronze bearings on which the pulleys rotate; free-end pulley spindle to permit easy installation of belts; both pulleys on one side of pivotal mechanism which permits motor pulley and driven pulley to be almost directly in line with each other.

Adjustable Speed Drive

WESTINGHOUSE ELECTRIC & MANUFACTURING Co., East Pittsburgh, Penn., has announced a series adjustable-speed drive having the high-torque characteristics of a d.-c. series motor combined with the flat speed characteristics of a shunt machine. Having a continuously variable speed range of 10 to 1, it is said to be far more flexible than adjustable-speed units employing wound-rotor motors.

The drive uses the variable-voltage principle, but employs a series-circuit that requires no exciter; consequently both control and wiring are simplified. It is said to be especially suitable for direct connection to an a.-c. power source.

The series drive is started directly from the a.-c. supply with a conventional across-the-line motor starter. Since voltage output of the self-excited generator builds up gradually under normal starting conditions, the driving motor is "cushioned" against mechanical shock. If the motor stalls it can produce a torque equal to six

Three machines instead of four, two of them mounted in the same frame, make the newly developed series adjustable speed drive more simple and efficient

times full-load running torque, even at minimum speed.

This drive has been applied to conveyors, ore concentrators, screens, coal feeders, and stokers in addition to many other industrial applications.

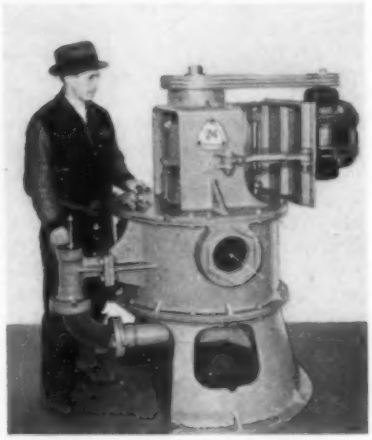
Unbalanced, Pulley-Type Vibrating Screen

ROBINS CONVEYING BELT Co., Passaic, N. J., has announced its Style M, Robins-Vibrex screen. It is a high-speed, unbalanced pulley type vibrating screen which, it is claimed, will stand up to overloads, and is designed to save power, lubricant, screen cloth and general maintenance costs.

Vibrating action is produced by adjustable counter-weighted arms. Only a small quantity of oil is required to lubricate each of the two bearings. Loss and contamination are prevented by a unique design of double bronze centrifugal flingers. Wear on screen cloth is kept at a minimum, according to the manufacturer, because the panels are rubber cushioned and maintained under arched transverse spring tension. The inclination of the screen surface can be varied at will and the amplitude of vibration and speed of operation can be changed to fit the application.

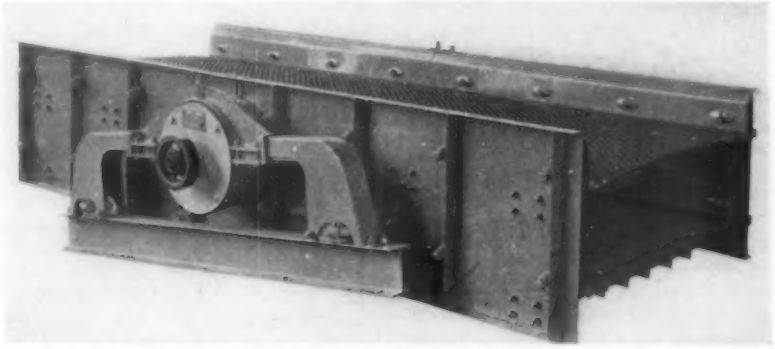
Centrifugal Sand Pump

DENVER EQUIPMENT Co., Denver, Colo., recently brought out 3-in. and 4-in. centrifugal vertical sand pumps designed to meet the demand for



Sand pump designed to handle coarse sands

larger capacity. The 3-in. has a capacity at 25 percent solids of 225 g.p.m., and the 4-in. size has a capacity of 450 g.p.m.



Vibrating screen has sharp vibrating action produced by adjustable counterweighted arms

The gravity flow arrangement from the bowl, located immediately above the runner, keeps the pulp away from and below the bearings. Another advantage claimed is the ability of these pumps to handle gritty pulps and coarse sands without packing gland troubles.

Large Capacity Truck Mixer

THE L. T. SMITH CO., Milwaukee, Wis., has announced the No. 3½ Smith-Mobile with ratings of 3½ cu. yd. for truck mixing, 4.27 cu. yd. for shrink mixing, and 4.58 cu. yd. for agitating. This machine replaces the former No. 3 model.

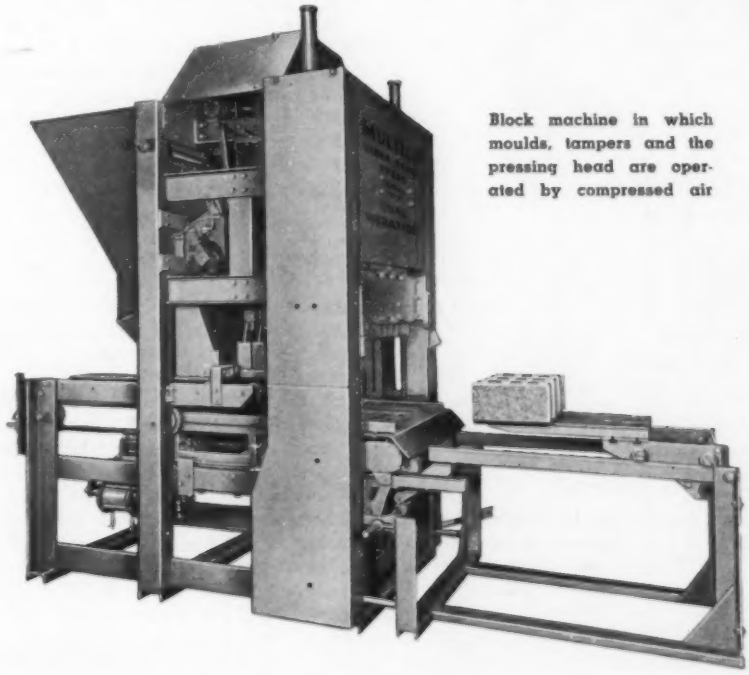
With its larger 165 cu. ft. drum volume, and sturdy, light-weight construction, this model is said to permit bigger pay loads. Features include: New, all-geared, fully enclosed, transmission; totally enclosed, oil-tight pump drive; 36-in. drum opening with self-centering feed chute; self-cleaning closing door with worm and worm gear operating unit; 160-gal. capacity water tank, with larger overflow pipes; and 42.5-hp. engine.

Truck mixer of 3½-cu. yd. capacity is of light-weight but sturdy construction

Blocks by Compressed Air

THE MULTIPLEX CONCRETE MACHINERY CO., Elmore, Ohio, has made further improvements to the block machine operated by compressed air, known as the Multico. This machine makes three 8-in. blocks per cycle. The production per cycle of other sizes is two 10-in., two 12-in., or six 4-in. block.

Operated by compressed air, the machine combines vibration, tamping and pressing. Tamping is controlled with a fingertip adjustment to any force desired within the range of 5-lb. to 2500-lb. blows. Dual vibration, provided at top and bottom, is said to insure uniform density. The machine can be provided with an air power take-off as there is a provision for sufficient extra air power to operate a block racking carrier.

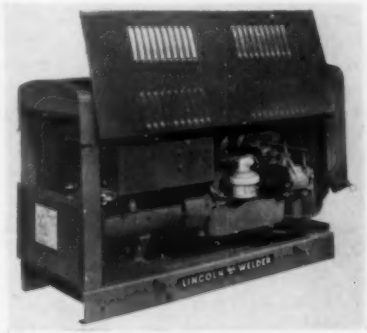


Block machine in which moulds, tampers and the pressing head are operated by compressed air

Engine Driven Arc Welder

THE LINCOLN ELECTRIC CO., Cleveland, Ohio, has brought out an engine-driven arc weld which is designed for job welding and garage work and embodies a new system of engine-speed control for fuel economy and minimum engine wear.

It is of 200-ampere size with a current range of 40 to 250 amperes, and can be used for welding light gage metal, for the repair of cast iron parts such as engine blocks, for fabrication of machine parts and structures, and for hardfacing.



Arc welder of 200-amp. capacity has engine-speed control

Of direct current type, it can weld effectively practically all metals and alloys with bare or shielded arc type electrodes or with the carbon arc where desirable. The self-indicating voltage and current control is said to make it easy for the operator to select any type of arc and any arc intensity to suit the job. This control directly varies the speed of the engine from 1800 to 1400 for welding duty and thus gives very accurate control of the open circuit voltage. This control may be used to bring the engine to an idling speed of around 900 r.p.m. The generator is a single-operator, variable type with laminated pole pieces.

This welder has many applications for making repairs and building up worn parts in the rock products industries.

Lime Experimentation

First of a series of articles on interesting research experiments in the manufacture of lime

By VICTOR J. AZBE

To one deeply in the subject of technique of lime manufacture, the impressive thing is not how much, but rather how little is known about the subject. Along almost any of the many diverse paths of either calcination or hydration, or application, we soon come to a blank wall with matters beyond only to be guessed at. There seems to be more known about the Polar Regions or Dark Africa than about the field of lime, although this field has been worked in since before the days of the ancient Egyptians.

But working in, is not exploring it—there are many producers of lime but only a few developers of information on lime. Then much of what is developed is retained for personal usage only, from which the industry as a whole derives little benefit.

Knowledge of a broad subject, such as lime, is like a structure of many sections each composed of many small units. To know fairly well but one division of the art, one has to know hundreds of sub-items that compose it, but there are other hundreds that he may not know, or even no one may know, which tends to prevent thorough mastery of the subject.

The aim of all those in position should be to keep pushing back the wall of darkness, of building up the structure of knowledge into an ever more solid and complete form. To do this requires not guesses, but experiments—experiments sound in nature so results are incontrovertible.

What different forms experiments may take is illustrated by the following definite examples and they, in turn, may suggest other forms of experimentation to those who are in position and are qualified to do so.

Experiment No. 1

Temperature Rise in Center of Stone Passing Through Kiln: It is well known that magnesium carbonate dissociates long before calcium carbonate in a dolomite calcining kiln, but what is not known is how high up in the kiln, at what temperature, and to what extent does the calcium zone inter-run with the magnesia zone in calcination.

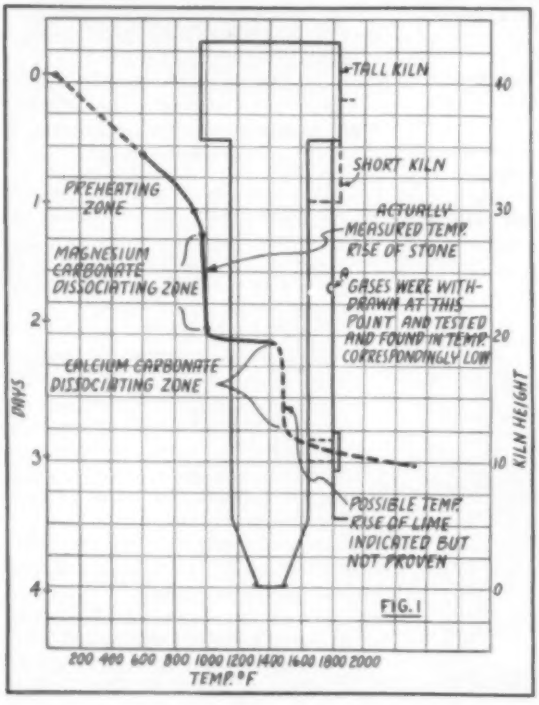


Fig. 1: Temperature curve of center of 5-in. diameter stone sample subjected to test

LIME FORUM

Mr. Azbe, consulting engineer, is a contributing and consulting editor of ROCK PRODUCTS. He will be glad to receive inquiries from his readers, and will answer these direct or through the columns of this Forum.

To determine this is very difficult but the experiment was undertaken and although it was not carried out to final conclusion considerable of value was determined.

The procedure was to take a 5-in. diameter dolomitic stone of the Ohio variety and drill a hole through the center. Then a thermocouple was inserted with its junction in the center of the piece. The thermocouple was 45 ft. long coiled upon itself so as to have a good stretch and was connected to a portable recording Leeds and Northrup Micromac potentiometer. The test stone was dropped into the kiln and allowed to pass with the general mass downward while its temperature was recorded.

Fig. 1 shows the outline of the National Mortar and Supply Company's kiln at Gibsonburg, Ohio, with its heights. Superimposed is the temperature curve plotted against height of kilns and days of travel of stone.

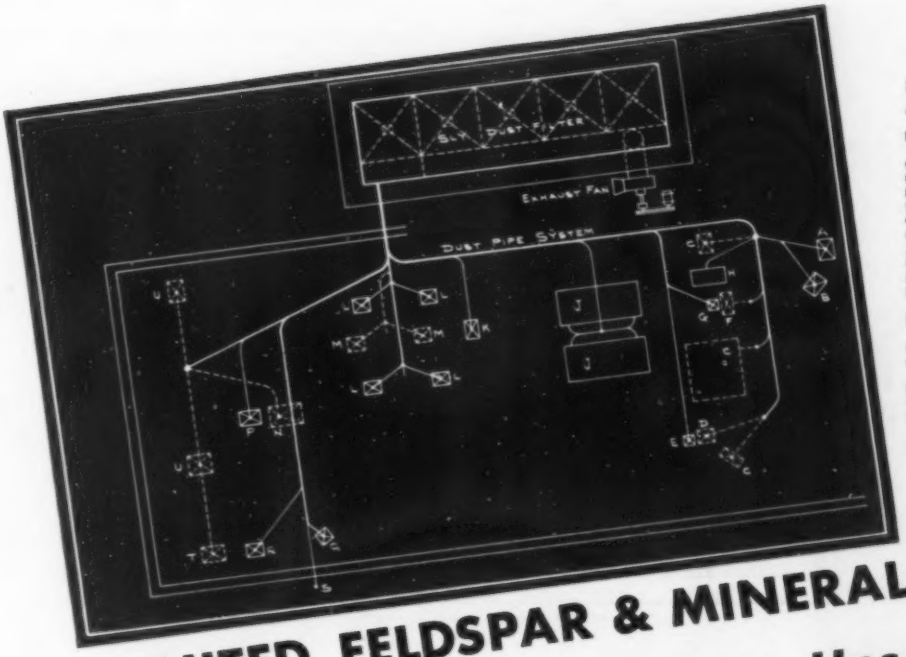
For 1¼ days the stone was merely preheating, its temperature rising to 1000 deg. F. There was no thermal reaction, then suddenly temperature stopped rising and remained practically constant for almost a full day. It was during this time that $MgCO_3$ was dissociating, for which in these low capacity kilns it needed almost a full day.

It is evident that calcium carbonate calcination could not start until magnesium carbonate was fully calcined, and after that there is a very sudden rise in temperature from 1000 deg. F. to 1400 deg. F., at which point the curve would probably have again flattened out for calcium carbonate dissociation, but unfortunately the thermocouple wire broke.

If the thermocouple wire had not broken, the experiment would have been of inestimable value, but even so it was far more than well worth all the trouble and expense.

It showed that the three zones, of preheating, of magnesium and calcium calcination are distinct. That all are of approximately the same height superimposed on each other; that magnesium starts dissociating high

(Continued on page 96)

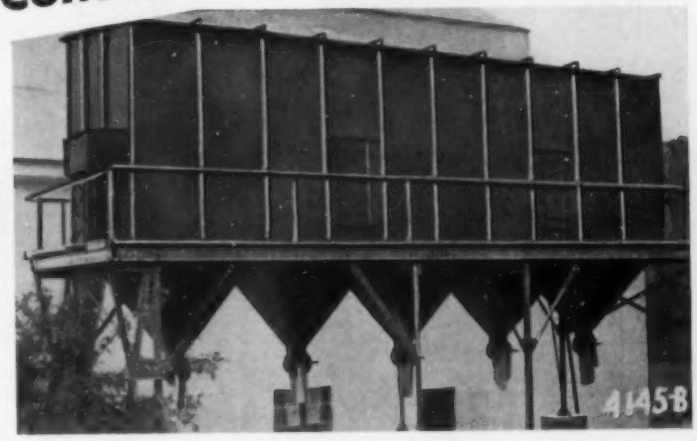


LEGEND

A Discharge belt conveyor to scalping screen
B Discharge belt conveyor to storage bin
C Discharge of roll crushers
D Boot of bucket elevator
E Head of bucket elevator
F Boot of bucket elevator
G Head of bucket elevator
H Vibrating screen
J Two double vibrating screens
K Head of bucket elevator
L Magnetic separators
M Discharge magnetic separators to belt conveyor
N Discharge belt conveyor to bucket elevator
P Head of bucket elevator
Q Discharge bucket elevator to belt conveyor
R Head of bucket elevator
S Bulk carloading
T Discharge belt conveyor to bucket elevator
U Discharge of "feeders" to belt conveyors

UNITED FELDSPAR & MINERALS CORP.

Improves Working Conditions—Ups Production with SLY DUST CONTROL



● Sly Dust Filter at United Feldspar & Minerals Corp., West Paris, Maine. The feldspar as it comes from the quarries is crushed and screened to the proper size, for shipment mainly to the glass and ceramic industries.

In crushing and handling feldspar, United Feldspar was faced with a serious dust hazard. Because of its powdery structure, the feldspar created excessive dust at various points of operation — crushing, screening, conveying, storage, loading, etc. *Something had to be done about it.*

They consulted us. Definite air volumes for the control of the dust were determined and a Sly Dust Control System installed. It has resulted in making the plant safe for the men and building up production.

United Feldspar has experienced in Sly Dust Filters certain exclusive advantages:

(1) Greater filtering capacity because of more filter cloth.

(2) Less maintenance due to simpler shaker mechanism.

(3) Bag replacement easily handled.

(4) Complete dust removal with minimum resistance to air flow because of filter bags under tension.

(5) Automatic control (any degree).

These features help enormously in efficient operation.

Write us fully. We will analyze your situation and tell you exactly what can be accomplished. Sly Dust Control pays for itself.

THE W. W. SLY MANUFACTURING CO.

Branch Offices in Principal Cities

★

4746 TRAIN AVENUE
CLEVELAND, OHIO

CINDER BLOCK

Consider Research Program

National Cinder Concrete Products Association to study staining in walls and methods of treating cinder aggregates

NATIONAL Cinder Concrete Products Association, Cloyd B. Fellabaum presiding, held a special meeting to consider research into the reasons for and prevention of popping and staining in walls of cinder concrete masonry. A ban against cinder concrete units in a large Eastern city prompted an investigation which will soon be under way.

Cloyd Fellabaum, National Cement Products Co., Toledo, Ohio, presiding at the cinder block meeting

The Portland Cement Association has organized a program of research, and will finance the bulk of the program, with cinder concrete products manufacturers contributing on the basis of volume of sales. The research program will cover a study to determine the injurious substances in coals; the burning methods; tests to determine the suitability of cinder aggregates; and an investigation of the possibilities treating cinders to neutralize any injurious content.

Considerable discussion was developed. A resettlement project where cinders used to make the masonry units were not first subjected to magnetic separation had high maintenance costs due to discoloration of the painted surface by rust. One block manufacturer suggested that small plant operators might not be able to afford the processing equipment that will become necessary from the results of the projected study.

It was well-agreed that cinders, when properly aged, maybe as long as two years, do not cause any difficulties. On the other hand, cinders used too soon after they come from the furnaces cause troubles. A long ageing period in stockpiles allows the lime to slake and probably causes other materials to leach out. A suggestion was made that it might be advisable to wet cinders down, while in stockpiles, to speed up the slaking of the lime. The troubles mentioned are of course purely local and in only a few isolated cases and might be due to the use of certain local materials that are faulty or improperly treated and handled. On the whole, very satisfactory performance has been the rule in walls of cinder concrete masonry.

Ansel T. Royers, North American Cement Co., New York City, right, chatting with Herbert A. Davis, Washington Concrete Products Co., Arlington, Va.

Harry Longenecker, Philadelphia, Penn., right, talking with J. W. Warren, Knoxville, Tenn.

Mineral Aggregate Standards

COMMITTEE C-9 on Concrete and Concrete Aggregates of the American Society for Testing Materials and Committee D-4 on Road and Paving Materials, are responsible for a new booklet of A.S.T.M. Standards on Mineral Aggregates, published in December. Single copies are priced at $1.25. There are 150 pp. divided into two sections: Part I—Specifications, Definitions, and Recommended Practices; Part II—Methods of Sampling and Testing.

Every producer will want a copy for his files; and it is to be hoped he will make himself familiar with the contents. It is the first special compilation of specifications, definitions, and methods of sampling and testing mineral aggregates. Fifty standards are given in their latest form. While most of the specifications pertain to concrete and concrete aggregates and to road and paving materials, there are standards pertaining to the following fields: aggregates for lime-, gypsum- and cement-masonry mortars, glass sand, asphalt waterproofing and roofing materials.

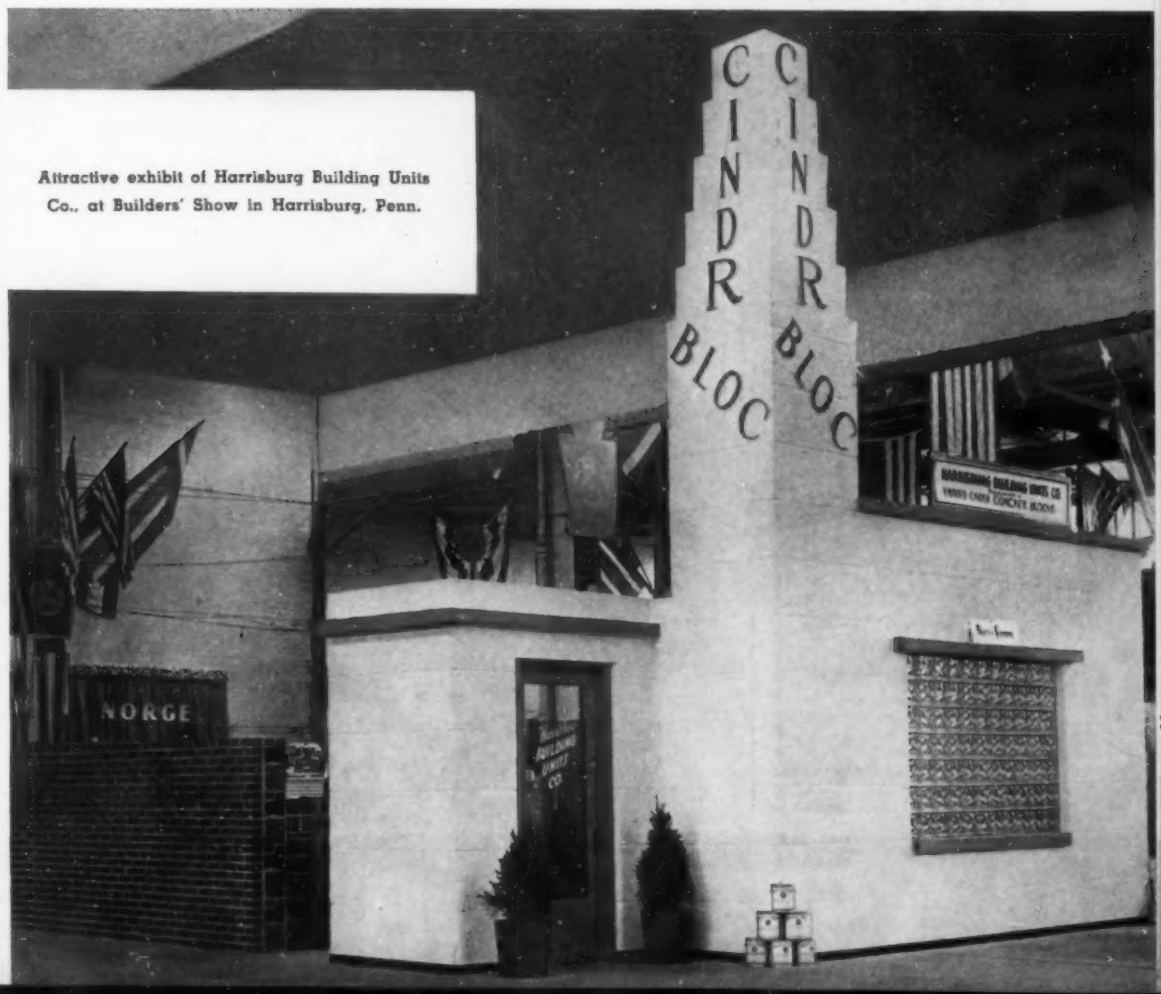
There are 29 specifications given carrying standard requirements for such materials. There are 21 standardized methods of sampling and testing, all of these being used to determine important properties.

U. S. Gypsum Co. Experimental Farms

UNITED STATES GYPSUM Co., Chicago, Ill., announces the establishment of one of the world's largest experimental farm laboratories, with a total of 17,351 acres in 99 farms of various types. Test projects will be run on the farms to show how production can be increased. Tests will show the advantages of types of buildings and building improvements, fire protection, home decoration, soil conservation, crop diversification, sanitation and marketing. Findings will be made widely available through the press, literature and building material dealers handling USG products.

CONCRETE PRODUCTS AND CEMENT PRODUCTS

EXHIBITS SELL CONCRETE PRODUCTS



Attractive exhibit of Harrisburg Building Units Co., at Builders' Show in Harrisburg, Penn.

CEMENT DISPERSION

GIVES *Speed* WITH *Savings*..

SEWAGE TREATMENT PLANT
MARION, INDIANA
Engineers—Consoer, Townsend and Quinlan, Chicago, Ill.
Contractors — Steigerwald and Borchert, Milwaukee, Wis.

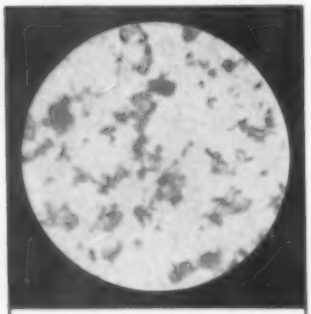
CEMENT DISPERSION produces greater cement efficiency. Increased cement efficiency means greater speed in concrete construction with *initial* savings.

These facts explain why Cement Dispersion has won the approval of many leading architects, engineers and contractors. These advantages explain why Cement Dispersion — through Pozzolith — is being used in many of the country's most important defense construction projects.

With Cement Dispersion, *initial* savings and speed are available whether the concrete requirements are strength, workability, placeability, water-tightness or durability.

• • •

Send for Research Paper Number 36, "Economics of Cement Dispersion", and complete information on Pozzolith.



Cement suspended in water
UNDISPERSED

WITHOUT POZZOLITH

In a normal concrete mix, cement particles tend to bunch together, thereby (1) limiting hydration and (2) trapping water within the cement clumps. (See photomicrograph above).

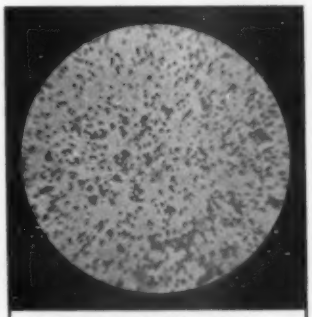
HOW CEMENT DISPERSION WORKS

Only a part of the cementitious value of the cement, whether normal portland or high early, is utilized under usual construction conditions. Investigation shows that with 28 days curing only 50% hydrates. [Anderegg and Hubbell, A. S. T. M. 29 II 554 (1929)].

Dispersed cement produces 25% to 40% higher compressive strengths.

• • •

THE MASTER BUILDERS COMPANY
CLEVELAND, OHIO TORONTO, CANADA



Cement suspended in water
DISPERSED

WITH POZZOLITH

Cement Dispersion drives these particles apart and (1) exposes their entire surface area to hydration, at the same time (2) making the water entrapped in the clumps available for lubrication of the mix. (See photomicrograph above).

MASTER BUILDERS

Telling By Demonstrating

National Concrete Masonry Association holds three-day convention in Buffalo demonstrating the correct way to lay up various types of concrete masonry

John L. Strandberg, the new president, presiding at one of the sessions

DEMONSTRATIONS of new types of concrete masonry construction to increase sales were the feature of the National Concrete Masonry Association annual convention held at Buffalo, N. Y., January 12, 13 and 14. Held in the meeting rooms of the Hotel Buffalo, these demonstrations practically eliminated the need for prepared papers and afforded delegates more opportunity than ever before to see what should be done and to ask questions.

Attendance was about 400, even though there was no machinery exhibit and regional meetings on the same subjects are to be held at Kansas City, Mo., February 2, 3 and 4 and at Atlanta, Ga., February 16, 17 and 18. The success of the idea of visual demonstrations was definitely established.

New Officers

JOHN L. STRANDBERG, Concrete Building Units Co., Kansas City, Mo., was elected president of N.C.M.A., succeeding John S. Chase, Chase Building Products, Inc., Fort Worth, Texas, who becomes chairman of the board of directors. Walter Manhardt, Milwaukee, Wis., was elected first vice-president; Ray A. Berger, Detroit, Mich., second vice-president; and Harold L. Spaight, third vice-president. F. W. Reinhold, Buffalo, N. Y., and E. W. Dienhart were re-elected secretary-treasurer and assistant secretary, respectively.

The complete board of directors includes John L. Strandberg, Walter Manhardt, Ray A. Berger, Harold L. Spaight, F. W. Reinhold, John S. Chase, M. W. Ferguson and three new members; John S. Bailey, Concrete Manufacturing Co., Atlanta, Ga.; H. A. Davis, Washington Concrete Products Co., Arlington, Va.; and Sam Paturzo, V. Paturzo Bro. and Son, Inc., Baltimore, Md. Walter Manhardt, Ray Berger and Harold Spaight comprise the executive committee. Members of the board, ex-officio, are Benjamin Wilk, Detroit, Mich.; Dan F. Servey, Kansas City, Mo.; George H. Krier, Brooklyn, N. Y.; Harve E. Kilmer, Des Moines, Iowa, and Roy N. McCandless, Detroit, Mich.

John S. Chase, in his opening address, said that the industry was in a much better position than it was in the last war, by having an organization to deal with priorities and other war-time problems.

In reviewing the past year, the industry had reached a new high in quality of product, he said, and had earned many new endorsers of its products as a result. In his opinion, an outstanding step in the direction of progress was the new A.S.T.M. standard for hollow load-bearing concrete units that increases the requirements for quality. It probably marks the first time that an industry has voluntarily sought an increase in standards to be met. The new standard will become effective soon, but already many manufacturers are controlling the quality of their products on the basis of this standard. Forty-six new members joined the Association in 1941.

Go After War Jobs

In the secretary's report, it was pointed out that two research proj-

Photo—Buffalo Courier

New officers of the National Concrete Masonry Association. Standing, left to right: W. J. Manhardt, Milwaukee, Wis., first vice-president; E. W. Dienhart, Chicago, Ill., assistant secretary; Fred W. Reinhold, Buffalo, N. Y., secretary-treasurer. Seated, left to right: John L. Strandberg, Kansas City, Mo., president, and John S. Chase, Fort Worth, Texas, retiring president, now chairman of the board

ects being conducted by the Portland Cement Association will be completed and the results published in 1942. One is on partition walls, the other on paints for floors. In a discussion of national defense construction using concrete masonry, it was pointed out that the cost of building barracks on an army construction project, was abnormally out of line for some unknown reason. The cost for laying up 8- x 8- x 16-in. units, for labor alone, ran as high as 30c each. A study is being made of the reasons, and more of this type of building, for barracks, etc., will be won for concrete masonry in 1942.

A big year was predicted for construction in 1942. New factories, government-financed and private homes and cantonment construction will be the principal volume of building. Nearly every State will have a cantonment. An anticipated 400,000 homes costing less than $6000 and 100,000 government-financed homes will be built, according to government estimates.

All these jobs will require selling and it will be necessary to shift sales tactics to new architects and government men in order to land them for masonry. In conclusion, the secretary's report urged that the industry plan ahead for construction after victory in the war.

A busy scene at the registration desk at the opening day of the convention

Priorities

E. W. DIENHART, discussing priorities, suggested there is a possibility of the allocation of cement and aggregates to the concrete masonry industry. The O.P.M. has requested a report on the volume of concrete masonry produced and the volume of materials used in 1941. The quantity of replacement parts and repairs must also be included, broken down into classifications such as pallets, gears, bearings, etc. Discussion developed as to ways and means of developing the information. One manufacturer of concrete masonry said he spent $6,500 for repairs and re-

(Continued on page 83)

At the Besser dinner. Above, left: Mr. and Mrs. J. W. Warren, Knoxville, Tenn., and to the right, Ciro Paolella, Hamden Building Tile Co., Hamden, Conn., seated next to Mary Picone and on the right Sal Picone, both of Brooklyn, N. Y. Below, left to right: Standing, W. J. Besser, Jesse Besser and Mr. and Mrs. Roy N. McCandless, Detroit, Mich. Seated, Mr. and Mrs. Jesse Besser, center, with W. J. Besser, his uncle, to the right

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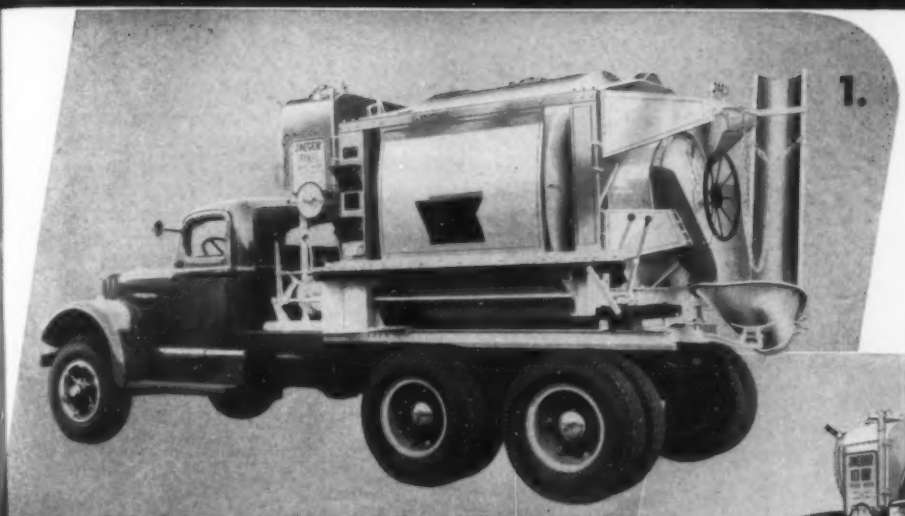
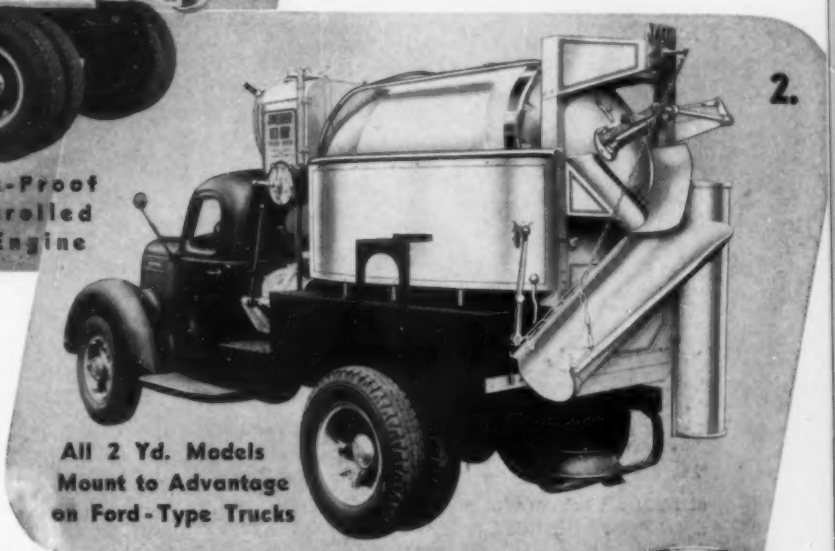


1.

All Jaegers Have 2-Speed Shock-Proof Transmission—Vacuum Cab Controlled Truck Engine Drive or Separate Engine

Standard LOW CHARGE

Type: Lowest, most economical to load; fastest on the market to mix and discharge — produce maximum daily yardage of proven higher strength concrete. Sealed drum meets any specification. Sizes 2 to 8 cu. yds.



2.

All 2 Yd. Models Mount to Advantage on Ford-Type Trucks

HIGH DUMP Types:

(2) Top Loading Models with "Sealed Drum"

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Far outselling all other high discharge truck mixers today because they are fastest to load, mix and discharge any slump concrete — and are the only high discharge truck mixers that meet every specification and job condition.

"Sealed Drum" Models take full load in one quick drop through the top. Fast Vacuum-Controlled Discharge Door seals against loss of moisture and heat in winter concrete.

Jaeger End Loading Hopper Attachment (specially adapted to older or temporary plants not equipped for ribbon loading) offers many advantages over all other end loaders — and does not interfere with use of Top Loading Door where specified by engineers. (See details at right.)

Both types are built in 2, 3, 4 and 5 yd. sizes.

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The only end-loader which does not constrict drum opening and slow up charging and discharge. One quick turn of hand wheel opens Discharge Gate — no need to move entire Hopper (requiring many turns of a wheel) — no second seal to leak or wear.

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Name_____

Address_____

WALL TYPES

New Types of Masonry

Demonstrations cover use of power saw, jointing methods, scored concrete masonry ashlar, cavity walls and composite walls

A CONSIDERABLE part of the entire convention was taken up by demonstrations of new ideas and new types of concrete masonry construction to promote sales. These demonstrations were conducted by E. W. Dienhart and P. M. Woodworth.

Subjects covered in the demonstrations were the use of the power saw, jointing methods, scored concrete masonry ashlar, cavity walls and composite walls.

ARTHUR STONE, Stone Manufacturing Co., Syracuse, N. Y., demonstrated the actual cutting of concrete block and joists with the power saw, and the scoring of concrete units. Scoring to a depth of ⅛-in. in a concrete block is accomplished in three seconds and at less than 1c per block.

Some of the uses for power saw equipment in a concrete products plant were mentioned. Units can be scored quickly and economically to simulate mortar joints and thereby be laid up in a wall with a pleasing ashlar effect, without the need for making multiple sizes. In filling orders for special sizes, such as halves, quarters and three-quarter block, these units can be made by sawing the standard block rather than changing the mold box on the block machine. Blocks with broken corners and edges may often be cut down to fractional block and sold as such. An instance was mentioned in Florida where a manufacturer of concrete masonry makes a practice of showing sawed sections to customers as a proof of quality as part of his sales presentation.

Part of the Toronto delegation: Left to right, Robert Eakins, and William Kelk, Leaside Block & Tile Co., and A. Carton

Laying Up the Wall

At one of the meetings Lamont McCandless, Detroit, Mich., brick mason and brother of Roy McCandless, former president of N.C.M.A., laid up a number of wall panels to illustrate the adaptability of concrete units to new treatment which would enlarge markets. Mr. McCandless, in his performance, illustrated good construction practice and the various ways of tooling mortar joints. While the walls were being laid up, Mr. Woodworth discussed the need for and the requirements for good workmanship and answered questions from the floor. F. J. Straub, self-styled "world's best bricklayer," took the floor to emphasize that good workmanship in laying up a wall is more than half the job in getting concrete masonry acceptance.

One panel was of standard gravel concrete units, scored horizontally, to illustrate the possibilities of scoring in producing an economical vari-

P. M. Woodworth at the "mike," E. W. Dienhart, Chicago; John S. Chase, Fort Worth; and Roy McCandless, left to right, looking at wall being finished by Lamont McCandless

Arthur Stone, Stone Manufacturing Co., answering questions following his demonstration in which various concrete masonry units were cut with a power saw

Candid "Shots"

Some candid "shots" of those who attended the convention. Fig. (1) Fred Paolella, Hamden, Conn.; (2) Alfred F. Schaefer, Rochester, N. Y.; (3) C. F. Conroe, Jamestown, N. Y.; (4) Daniel A. Matassino, Wilmington, Del.; (5) P. M. Woodworth, Chicago, left, chatting with Jay Ehle, Cleveland, Ohio; (6) Joe Nagy, Toledo, Ohio; (7) Ray A. Berger, Detroit, Mich., new second vice-president; and (8) John S. Chase, Fort Worth, left, talking to Frank Milewski, W. E. Dunn Manufacturing Co.

ation as compared with straight running block in a wall. Limitations in positioning the scoring in place also were shown. The scored unit, said Mr. Woodworth, is something new to add to the sales kit of the industry, particularly in a search for new markets after the war is over. He emphasized the widespread growth of ashlar walls and mentioned Detroit as an illustration, where from 60 to 75 percent of the production of Cinder Block, Inc., goes into exposed walls. In order to have a pleasing painted wall of scored units, true, clean block should be delivered on the job and no drips and spills should be permissible during the laying of the wall. Mr. Woodworth said that the best block salesman he knew in the business was one who gets up on the bricklayer's scaffold at least three times a day to see that the units are satisfactory.

A second wall panel was of 4-in. straight running cinder units, with a 4-in. course height. This wall is popular for home construction in the Southeast. A panel of straight 8-in. cinder concrete block was laid up. Another had vertical scoring to simulate 8- x 8-in. face block, using 2-core, 8- x 8- x 16-in. units, which made a checkerboard pattern. In reply to a question whether scoring would weaken a 3-core block, Mr. Woodworth said that the scoring is not over ⅛-in. in depth. He took this opportunity to mention that a 2-core block with a 2-in. face thickness has more rigidity and other advantages over the 3-core unit with 1½-in. face thickness, which was developed for convenience in splitting on the job.

Other walls shown and discussed were concrete block backed up to brick, and the cavity wall, which was much discussed. The cavity wall consisted of 4-in. concrete block and 4-in. concrete brick separated by a 2-in. wide air space, the equivalent of an 8-in. wall, with tie rods at every

Close-ups of some of the "regulars" attending convention

SELLING

Architects Tell Why—How

Some very constructive suggestions on how to sell concrete masonry offered by architects and realtors

SOME very constructive suggestions were given by two architects and a realtor who "Told Why and How They Use Concrete Masonry Units."

G. MORTON WOLFE, Buffalo architect, gave some helpful suggestions and an endorsement to concrete

John Brendel who "stole the show" with his talk at the Buffalo meeting

products. He confines his work exclusively to industrial and commercial construction, and is at present 100 percent engaged in industrial building for defense.

Mr. Wolfe started using concrete masonry to fill a need for economical construction along with strength. Concrete block are favored for his types of construction because they are readily available, easily laid, have acoustical properties, can be easily removed and replaced, and they are low in cost. Disadvantages mentioned were that sometimes concrete block are not made of the correct materials and are improperly engineered for below frost line construction.

In his opinion concrete building units are not in more general use because there are too many block manufacturers putting poor block on the market. He said that it was the job of the Association to see to it that all block manufacturers meet quality standards, and recommended closer coöperation between concrete products manufacturers, contractors and union labor. He would like to see an arrangement whereby architects could specify only concrete block approved by the National Concrete Masonry Association.

He has had some difficulty due to shrinkage of concrete block delivered to the job while green and recommended that an effort be made to discourage the practice. He would also like to see the use of more color in concrete masonry, either colors mixed integrally or applied as paint. Scoring, in his opinion, is a good development, to break up a wall surface and make a more interesting appearance. Anything that will improve appearance is what he is after. He concluded by saying that the concrete masonry industry is doing industry and the home-building public a service by reducing building costs. By the use of concrete masonry, home ownership has been made less of a burden and has reduced rentals for homes, industrial and commercial buildings.

Use Thermometer to Sell Houses

JOHN BRENDEL of the George Wallace Realty Co., Buffalo, is sold on cinder block. He sold several houses constructed of concrete block and afterwards was able to find some good sales arguments. He noticed how the inside of a concrete block house

A. C. McGuire of Comac Builders Supply Co., Rochester, N. Y., wears that genial Irish smile

is cool in the summer, and recommends that concrete block manufacturers use a thermometer as one of their sales tools. The application of cement paint to concrete masonry walls, he believes, gives a smoother and improved appearance.

Mr. Brendel has sold 80 low-cost concrete masonry houses, 24- x 28-ft., in Buffalo that range from $2400 to $4500 in price. These houses have four rooms including a living room, two bed rooms, kitchen and bath. They have no basements. Those having heating plants are provided with a utility room, while those without heating plants use stove heat. The first floor has a 4-in. concrete slab on a cinder fill, with a subfloor of wood joists covered with oak flooring.

He induces prospective buyers to visit homes already built and occupied

General view of one of the sessions of National Concrete Masonry Association

and gets them to talk to the owners. He also gets them to look at photographs of all the types of houses he has built. In his experience, the occupants of his houses are his best salespeople.

Must Sell Quality Block

JOHN DEFOREST of DeForest and Swain, architects, who specializes in low cost concrete masonry homes and who has built 200 such homes made several recommendations for improving concrete masonry house construction. First, he said that architects must have available well-seasoned blocks, and be able to get concrete masonry units from the better plants that are equipped with modern machinery. For reasons of economy, dimensions of buildings must be such that they fit the dimensions of the concrete units, he said, in referring to house plans put out for architects. This applies to general outside dimensions as well as to the dimensions of door and window openings.

It was suggested that architects be provided with a generous variety of good low-cost house plans and information on commercial paints that are satisfactory. He is in favor of cavity wall construction, where two 4-in. wall thicknesses are separated by a 2-in. air space, to eliminate lath in the application of plaster.

Wall Types

(Continued from page 81)

other course. This type of wall has the approval of U.S.H.A. and has many advantages. The 2-in. air space affords insulation, and units of different textures could be used for the two sides. In this way block having nailability and acoustical properties could be used for the inside of the wall to eliminate furring and plastering, regardless of the type units on the outside. If expanded mica is filled into the cavity, an already low heat loss through the wall can be cut in half.

In the discussion that followed the demonstration, Roy McCandless remarked that good units can be sold, if builders use as many units as they do, that he considers inferior. In his opinion, bricklayers need cultivation. A good bricklayer, he said, using a good mortar and jointing with which he is familiar is essential to a good finished job.

Convention

(Continued from page 78)

placements on $150,000 worth of business, excluding trucks.

Entertainment included the annual banquet, a cocktail party by the Stearns Manufacturing Co. and a motion picture and buffet supper with the compliments of the Besser Manufacturing Co.

Accounting Lawsuit

PACIFIC PORTLAND CEMENT CO., San Francisco, Calif., is being sued for an accounting by a group of minority stockholders in the Beaver Portland Cement Co. to recover about $1,000,000 for themselves and other stockholders. Pacific Portland Cement Co. purchased all the physical properties of the Beaver Portland Cement Co. at Gold Hill, Ore., in October, 1940. According to the complaint, the defendant acquired properties valued at more than $1,322,313 for $322,401.73.

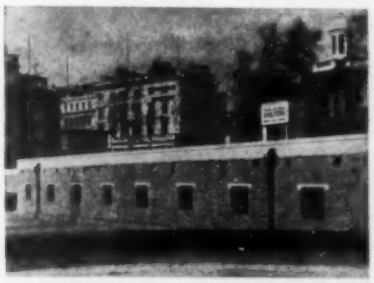
New Power House

LOUISVILLE CEMENT CO., Speed, Ind., is building a new power plant to be completed soon. The new equipment will include stoker-fired Combustion Engineering Co. boilers.

Lighted display of the Besser Manufacturing Co. at the concrete products convention

Concrete Brick Bomb Shelters

DUNBRIK LIMITED, London, England, reports the use of large quantities of concrete brick for the construction of air raid shelters. Stanley Robinson, general manager of the English company, reports, "These shelters have proven effective even with bombs falling very near, having stood up to impact and blast in grand style." Brick are supplied in a choice of colors at about $15 a thousand in American money. Machinery for manufacturing the brick was furnished by the W. E. Dunn Manufacturing Co., Holland, Mich.



Public air raid shelter in Trafalgar Square, City of Westminster, England, is faced with concrete brick

Diesel Replaces Steam Tugs

WOLVERINE PORTLAND CEMENT CO., Coldwater, Mich., has replaced all its wooden hull marl boats and dredges with steel vessels during recent years. A $10,000 Diesel-powered steel tug recently replaced two steam-powered tugs on Marble Lake. Within the past two years 12 smaller mills were replaced with one large clinker grinding mill.

Install Block Machine

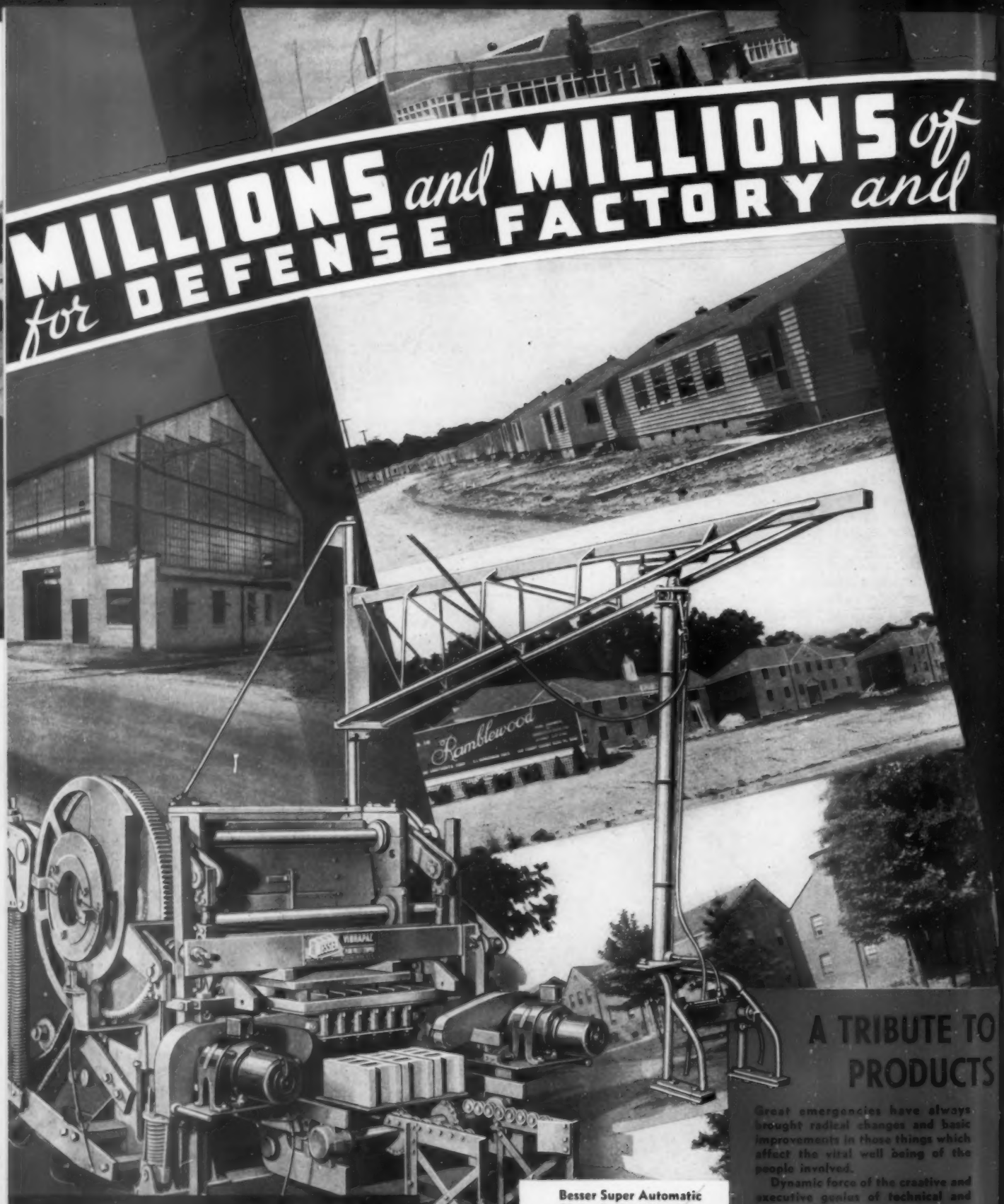
THE MIAMI CEMENT PRODUCTS CO., at Sevenmile, Ohio, Butler county, has installed a new Besser Automatic block machine with a capacity of 4½ block per minute.

Concrete Pavement Yardage

AWARDS of concrete pavement for December, 1941, have been announced by the Portland Cement Association as follows:

	Square Yards Awarded During December, 1941
Roads	3,196,711
Streets & Alleys	2,015,193
Airports	2,964,253
Total	8,176,157

MILLIONS *and* MILLIONS *of* *for* DEFENSE FACTORY *and*



Besser Super Automatic Plain Pallet Vibrapac

BESSER PLAIN PALLET STRIPPERS

A Besser Plain Pallet Stripper For Every Need

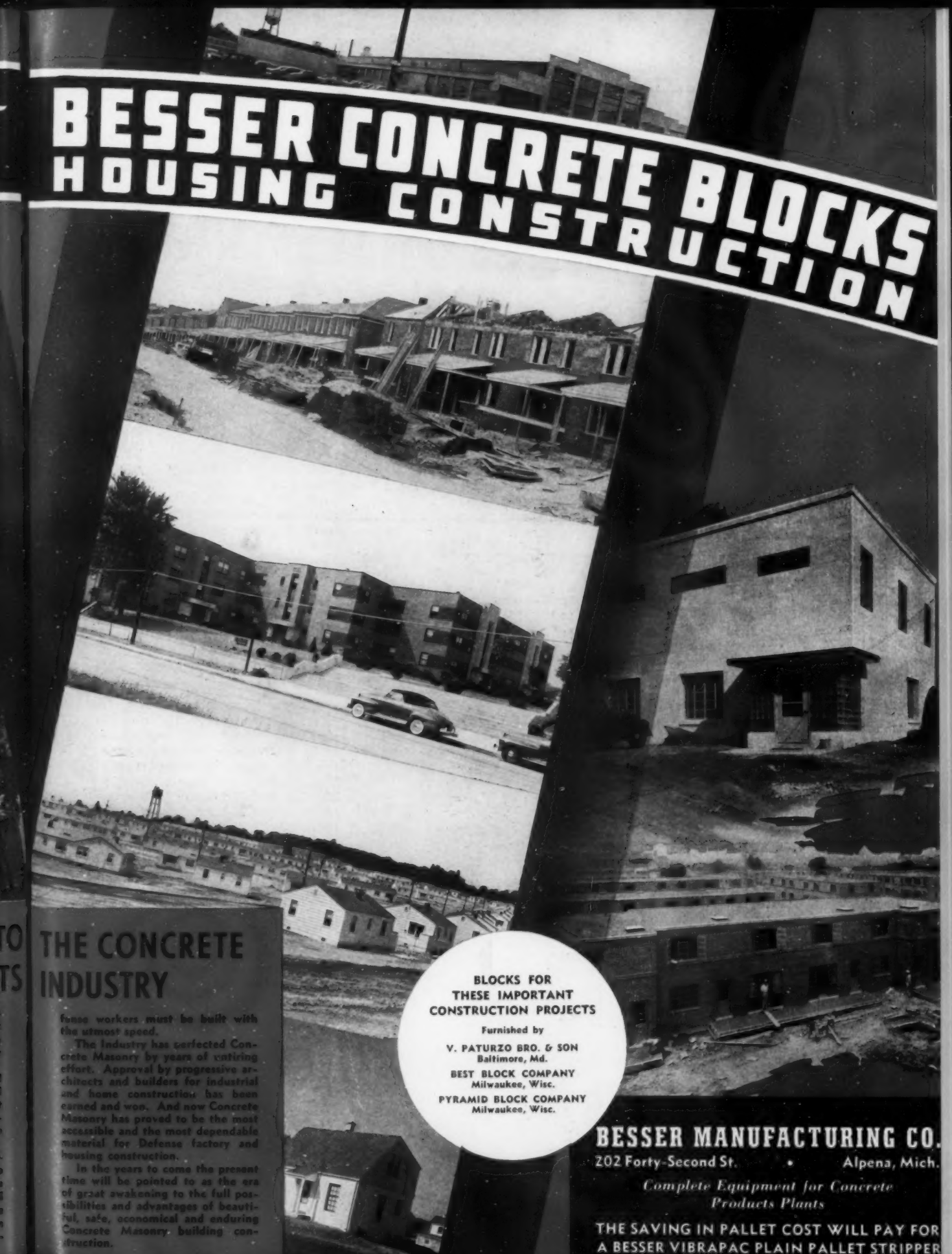
TAMPERS	Besser Super Automatic	8 Hr. Capacity 3120
	Besser Victory Automatic	8 Hr. Capacity 2160
	Besser Semi Automatic	8 Hr. Capacity 1680
	Besser Champion, Power Operated	8 Hr. Capacity 1000 to 1200
	Besser Multi-Mold, Hand Operated	8 Hr. Capacity 250 to 350
VIBRATORS	Besser Super Automatic Vibrapac	8 Hr. Capacity 4800
	Besser Victory Automatic Vibrapac	8 Hr. Capacity 2160
	Besser Master Vibrapac, Hand Operated	8 Hr. Capacity 800

A TRIBUTE TO PRODUCTS

Great emergencies have always brought radical changes and basic improvements in those things which affect the vital well being of the people involved.

Dynamic force of the creative and executive genius of technical and business leaders is now being felt in industry. Victory is already assured for all free and progressive countries.

Concrete Products Manufacturers everywhere have shown ability to meet the unprecedented situation in Defense construction. Critical materials must be conserved. At the same time factories for production of war materials and homes for de-


BESSER CONCRETE BLOCKS
HOUSING CONSTRUCTION
THE CONCRETE INDUSTRY
fense workers must be built with the utmost speed.
The Industry has perfected Concrete Masonry by years of untiring effort. Approval by progressive architects and builders for industrial and home construction has been earned and won. And now Concrete Masonry has proved to be the most accessible and the most dependable material for Defense factory and housing construction.
In the years to come the present time will be pointed to as the era of great awakening to the full possibilities and advantages of beautiful, safe, economical and enduring Concrete Masonry building construction.
BLOCKS FOR THESE IMPORTANT CONSTRUCTION PROJECTS
Furnished by
V. PATURZO BRO. & SON
Baltimore, Md.
BEST BLOCK COMPANY
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PYRAMID BLOCK COMPANY
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BESSER MANUFACTURING CO.
202 Forty-Second St. • Alpena, Mich.
Complete Equipment for Concrete Products Plants
THE SAVING IN PALLET COST WILL PAY FOR A BESSER VIBRAPAC PLAIN PALLET STRIPPER

PAINTING

Applying Paint to Concrete

Demonstrate how to get satisfactory results when applying paint to concrete masonry walls

WALL panels laid up by Lamont McCandless were painted by P. M. Woodworth in a demonstration on "How to Get Satisfactory Results When Applying Paint to Concrete Masonry Walls." All of his discussion was confined to portland cement paints, since there had been the opportunity to observe and study the performance of these paints over a period of 15 years or more. Mr. Woodworth discussed performance of painted walls, the future market for units as influenced by paints and research that has been made into the composition and application of paints.

P. M. Woodworth, left, C. F. Conroe, Jamestown, N. Y., and Jay Ehle, Cleveland, discussing cavity walls

A new master specification, TT-P-21, has been prepared for portland cement paints by the Federal Specifications Board that sets standards for composition for several types. Mr. Woodworth concluded with some recommendations for wall preparations and the actual application of portland cement paint. He gets best results with an ordinary dime-store scrub brush with stiff bristles, using a circular motion and plenty of elbow grease. The wall surface is first soaked with a fine water spray, according to a definite plan, and then the cement paint is applied. Cement paint covers 45 to 55 sq. ft. per gal. of paint for two coats and 35 sq. ft. if the surface is coarse textured.

Above: Walter Sherman of Best Block Co., Milwaukee, showing how to paint concrete masonry walls. H. McCandless, above

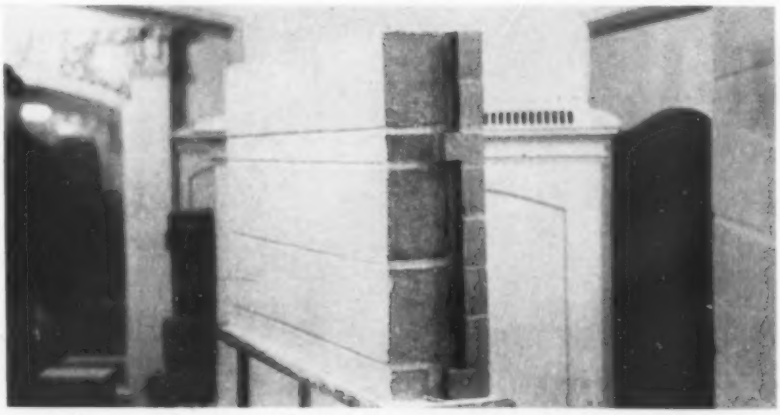
To emphasize the increasing use of painted walls, he said he would estimate that ten times as much masonry wall area was painted in 1941 as in 1938. If good service and pleasing decorative effects are obtained, the sales of concrete units can be multiplied, in his opinion.

Durability of the painted surface depends upon the texture of the wall, cleanliness, composition of the paint, the method of application and the exposure. If the wall is not cured properly or the paint film applied is too thin results will suffer. Inadequate preparation of the surface is responsible for peeling and cracking. If correctly applied, the painted wall should give six to eight years of good service. Normal crazing ends in a few weeks, he said, and crazing greater than 0.002 in. is usually due to crazing in the units.

Defense Bonds or Stamps In Payment for Overtime

WHILE WORKERS cannot waive their rights to time-and-a-half for overtime after 40 hours, they may voluntarily accept straight time in cash and the balance in defense securities. This statement was recently made by Baird Snyder, Acting Administrator of the Wage and Hour Division, U. S. Department of Labor.

Below: Wall panel with concrete masonry backed up to brick



Increasing Markets For Sand-Lime Brick

Diversification of products, high quality standards, and more aggressive selling emphasized at Sand-Lime-Brick convention

J. W. Van Brunt, new president of sand-lime brick association and head of Grande Brick Co., Grand Rapids, Mich.

AT THE ANNUAL convention in Buffalo, N. Y., Jan. 12, 13 and 14, the Sand-Lime Brick Association emphasized merchandising and the necessity for quality in manufacturing sand-lime products. Doing business under a wartime economy and the possibilities for the utilization of high pressure steam-curing in making products, other than brick and block, were discussed at some length.

Diversification is considered by the industry as the best solution to an uncertain future in business. That part of the program was in the nature of a round-table forum without any definite decision being reached. Some of the future possibilities for expansion mentioned were air raid shelters, mastics, etc.

New Officers

J. W. VAN BRUNT, president of the Grande Brick Co., Grand Rapids, Mich., succeeds Chester A. Perkins as president of the Association. J. Morley Zander, Saginaw, Mich., secretary, and Leo J. Ryan, Windsor, Ont., vice-president, were reëlected. C. A. Perkins, Mishawaka, Ind.; J. A. Johnson, Minneapolis, Minn.; and Harold J. Levine, New York City, with the officers, make up the executive committee. A new office, advisory officer, was created for Elmer Coates, Seattle, Wash., who has been doing a remarkable job on behalf of the membership in promoting the sale of sand-lime products to government agencies.

C. A. PERKINS, in opening the convention with his presidential address, briefly touched upon the problems facing the industry in the future.

Design New Block Car

Mr. Zander followed with a discussion of a new design block car that he developed for increasing the capacity of his curing kilns. The car is designed to hold 96 block, 8- x 8- x 16-in., which is getting the maximum inside a kiln of circular vertical section.

New Products Open New Markets

In a discussion of sales, Carl G. Miller, Missouri Hardstone Brick Co., St. Louis, Mo., told of some markets being actively developed for sand-lime block. Until 18 months ago, this concern made only sand-lime brick. The block are made on a Besser Victory machine and test upwards of 1800 p.s.i. gross area, in compression. These units are being sold over a wide radius, into the States surrounding Missouri. The 4-in. units are being used for the interior facing of garages, 8-in. for the construction of farm buildings and industrial structures and 6-in. for partition walls in industrial construction—to mention some of the rapidly growing markets.

Elmer Coates, Mutual Materials Co., Seattle, Wash.

Concrete units, made from an unusually white portland cement and cured by high pressure steam in the kilns, test 3530 p.s.i. gross area, 6140 p.s.i. net and have an absorption of 7½ percent. Because of their whiteness and other properties a premium of 2c per block over the prices for air-cured block is obtained.

J. MORLEY ZANDER emphasized that the plants in the industry that have succeeded are only the ones that have based their business on quality of product. As far as sales are concerned, in his company, he said that he only asked that the best brick by test be accepted by the builders and architects. He has a standing offer to pay for the testing of his products if the customer will test competitive brick at the same time and place. The customer is permitted to select brick from stock for testing, provided he does the same for other brick.

Mr. Zander's theory of building permanent business is to back up his products by tests. If tests show an unfavorable comparison, the reasons should be checked immediately and corrections be made to out-test competitive brick. In his opinion, certain architects and builders who have been partial to other materials should be induced or forced to make competitive tests. An instance was mentioned by another manufacturer where local inspectors for a government agency rejected sand-lime brick for a project, without making tests, even after approval had been granted sand-lime brick for the job. An important job

Carl Miller, Missouri Hardstone Brick Co., St. Louis, Mo.

to be done by the industry is to get the FHA to specify brick by grades.

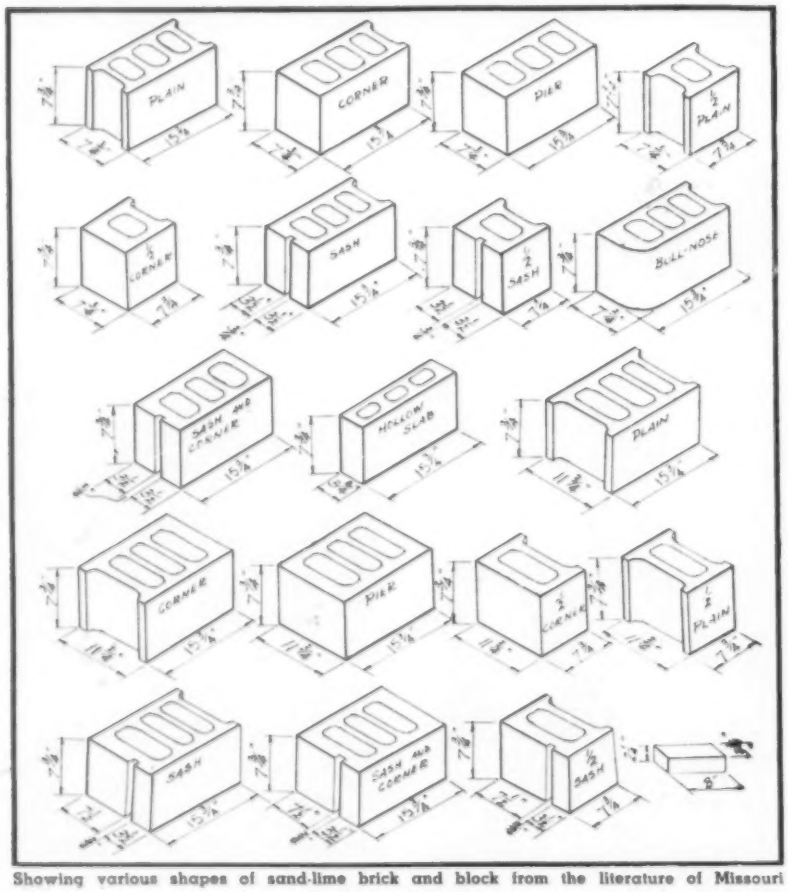
Selling the Government

ELMER COATES, Mutual Materials Co., Seattle, Wash., said that his concern makes a policy of selling its own salesmen on its sand-lime brick and its advantages and disadvantages in comparison with competitive products. The salesmen are thoroughly acquainted with necessary test data.

Tests are important in selling to government agencies, said Mr. Coates, but contractors do not care for a discussion of tests and data. The contractor is asked to take a little time out for a quick demonstration, such as the immersion of a sand-lime brick alongside competitive brick into a bucket of water to prove the difference in absorption. Visible proof, like this, has proven effective in Mr. Coates' territory.

Mr. Coates emphasized the necessity of selling to government and defense jobs and the need for getting approval for underground and chimney jobs. The United States Housing Authority has not approved the use of sand-lime brick as yet and there is difficulty in getting the War Department to use sand-lime brick except for back-up work. Lightness in color, favorable fire tests and other advantages of sand-lime brick have not been stressed enough, he said. In his opinion painting of sand-lime brick walls would be unnecessary, on war department jobs, which would mean a great saving in man-hours. Mr. Coates has been to Washington lately to discuss the use of sand-lime brick with the officials heading the agencies in question, with some favorable reactions.

A candid "shot" taken at the meeting. In the front is J. A. Johnson, Gopher Brick & Flooring Co., Minneapolis. Across the table, from left to right, Carl Miller, J. W. Van Brunt and John Garcia



Showing various shapes of sand-lime brick and block from the literature of Missouri Hardstone Brick Co.

Production Problems

J. W. VAN BRUNT, Grande Brick Co., Grand Rapids, Mich., discussed an improvement in feeding rotary presses that is built right into the Jackson-Church machine. It is a means to getting a feed that will produce a more uniform brick.

FRANK PERKINS, Mishawaka, Ind., read a paper on his increase in sales establishment of standards for brick of all kinds, and tracing the improvements in quality from the beginning of the industry.

LUTHER RANDOLPH, Ann Arbor, Mich., concrete block manufacturer, read a paper on his increase in sales of concrete units since he changed from low pressure steam curing to high pressure kilns. He said that he has improved the quality and appearance of his block to the extent that architects and builders now specify concrete masonry without hesitation. There were seven concrete block plants in Ann Arbor when Mr. Randolph went into the business. Now he is the only one left and his sales costs amount to very little. At first architects and builders confined the use of concrete block to back-up and other hidden locations but now they want to show them off for exterior use.

Storage space was limited to 30- x 125-ft. at Mr. Randolph's plant, which was extremely cramped. With high pressure steam curing he had no trouble in handling the production and sale of 1¼ million 8- x 8- x 16-in. equivalent units in 1941.

READY MIX

Efficient Material Handling Methods

Erie Materials Co. operates 13 mixer trucks of 3 cu. yd. capacity from modern batching plant

Batching plant, showing swiveling chute arrangement for aggregates on roof with cement elevator to the right and the bag elevator below

IN THE FALL of 1941, the Erie Materials Co., Fort Wayne, Ind., put the finishing touches on its new ready mixed concrete plant, office, and service building, probably one of the most efficient units of its kind in the country. This new plant was erected adjacent to an old plant which was torn down to make way for the new structures. The old plant was operated by a long-established company under the same name as the new concern which is under entirely new management, controlled by local interests. The older company was a subsidiary of the former Erie Stone Co., Indianapolis, Ind.

Thirteen new 3-cu. yd. Smith high-dump mixer trucks were acquired to operate out of the new plant which is estimated to have a capacity of 60-cu. yd. of concrete per hour.

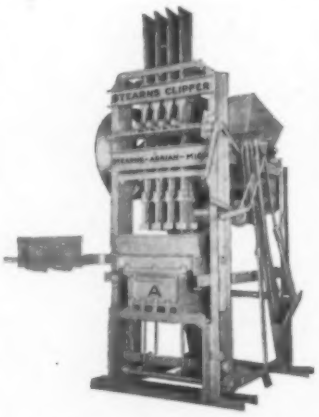
Aggregates are received by rail over an elevated track siding, and are dumped from hopper cars into bins over a tunnel conveyor system. These bins have a capacity for 3000 tons of sand and 800-tons of stone, 1¼-in. down. The 24-in. Goodyear conveyor belt in the tunnel is 155-ft. long, and is fed aggregates through 18 manually operated sliding gates. Aggregates on the conveyor drop over a screen with comparatively large openings into the boot of a bucket elevator, 75-ft. centers, which carries it to the top of the plant where a swiveling spout directs material into the proper plant bin compartment. The spout is controlled by a selector wheel on the ground by means of a cable extending up to the spout on the roof.

The plant bins have a total capacity of 316-cu. yd.; four compartments for aggregates having a total capacity of 196-cu. yd., and two for cement with a total capacity of 120-cu. yd.

Cement may be handled in three ways, all of which are depicted in the illustrations. Usually cement is handled in bulk from special railroad hopper cars by spout to a 9-in. screw conveyor located below the track and leading to an enclosed bucket elevator going to the top of the plant from which it is spouted into the two cement compartments of the bin. In case special cement hopper cars may not be available, cement may be received in box cars and dumped into the special type chute, made to the company's design, into the screw conveyor. The third method of receiving cement is by truck delivery of sacks which are elevated from the ground to the batching control floor by means of the chain elevator having prongs on which the sacks are supported.

Equipment on the batching floor comprises a Butler single beam scale for cement, and a Butler 4-beam scale for aggregates. Water is also provided for each mixer batch in measured quantities by a Butler weigh control. Water is discharged into the truck mixer drums through a telescoping hose. The flow of cement is made positive by means of an electric

Mixer truck taking a load. Note flexible hose for delivery of water to the drum



"ANCHOR"

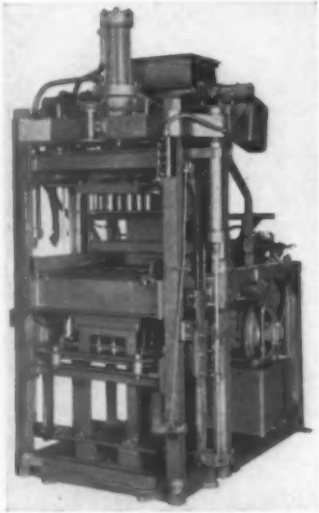
Complete equipment for making concrete, cinder and other light weight aggregate units, including engineering service for plants and revamping of old ones for more economical service. Hobbs block machines, Anchor tampers, Anchor Jr. strippers, Stearns power strippers, Stearns Joltcrete, Stearns mixers, pallets, Straublox Oscillating attachments, etc.

Repair parts for Anchor, Ideal, Universal, Stearns, Blystone mixers and others.

Anchor Concrete Mchy. Co.

G. M. Friel, Mgr. Columbus, O.

HYDRAULIC VIBRA-PRESS



A High Production Machine
Making Blocks which are
Demanded by the Contractor
Endorsed by the Architect
Desired by the Mason

The KENT MACHINE CO.
CUYAHOGA FALLS, OHIO

Screw conveyor to unload cement from special cement hopper cars. Below may be seen the emergency hopper for unloading cement from box cars

vibrator on the batch bin. Butler also furnished the screw conveyor, and batching plant. Belt conveyors and bucket elevators were provided by Columbus Conveyor Co.

The plant is entirely enclosed for winter operation. A 60-hp. oil-fired boiler supplies steam to heat a hot water tank to supply truck mixers, and also furnishes the steam for heating the batch plant and the aggregates. A pipe line within the concrete tunnel housing the reclaiming conveyor belt has extensions projecting into the live storage bins of aggregates above to supply steam for heating materials during the winter months. Hot water is provided by a Marion continuous water heater with automatic valve for controlling temperature.

A modern office, maintenance and service building also was built. As shown in the illustration, one end of the building is a garage with facilities for lubricating and repairing mixer trucks and other equipment. There also is a storeroom for repair parts, and a modern washroom and locker room for the men. The superintendent's office is equipped with a loudspeaker system of communication between office and batching plant, meeting rooms, and private offices for company officials.

W. J. Fishering is president, Robert W. Fisher is plant manager, and J. R. Mills is superintendent.

New Products Plants

WEBB AND TURNER, Seaford, Dela., is building a plant for the manufacture of concrete block, cinder block, slag block and a new type of chimney block.

•

NATIONAL CONCRETE AND FIREPROOFING CO., Dallas, Texas, has taken out a charter to operate as the National Concrete Co. of Texas, with offices in the Gulf States Building.

•

VIC TACHENY, Whitefish, Mont., has started construction of a new concrete block plant.

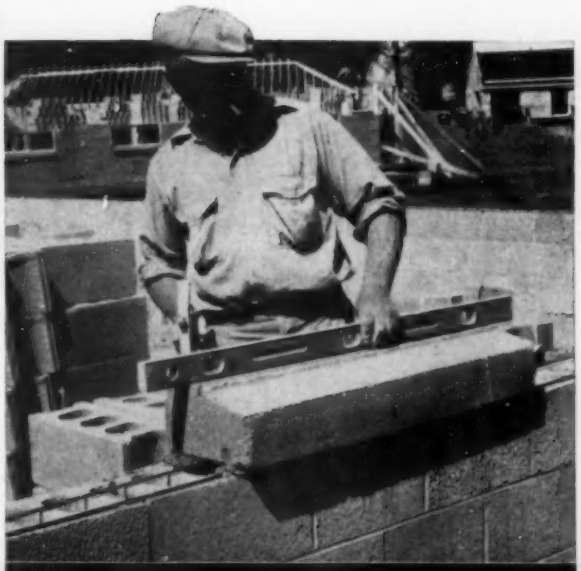
New service and office building of the Erie Materials Co. Service and garage section is shown to the right

THE TRANSPORT MIXER

COMPARE YOUR COSTS WITH THESE!

Less than 4 cents per cubic yard for maintenance and repair. Total truck mixer investment could be charged off now at 26 cents per cubic yard by this supplier of concrete to one of the nation's largest ordnance plants.

CONCRETE TRANSPORT MIXER CO., INC.
630 Rosedale Ave. St. Louis, Mo.



Thousands of needed CONCRETE jobs *don't need* critical materials

In and around defense housing projects, defense plants and defense areas today are thousands of improvements that need the firesafety, durability, maintenance-thrift and low annual cost of CONCRETE.

In many other areas concrete materials are available for modernization and improvement jobs that will build up home values, help business, boost farm and factory production.

These jobs frequently require no critical materials.

And since concrete materials are for the most part local, concrete construction involves minimum use of freight cars and trucks needed for moving defense goods.

Aggressive concrete products men and concrete contractors are *going after jobs* in 1942 . . . with newspaper ads, mailing lists, truck and job signs . . . with salesmen, demonstration kits, cost estimates.

Defense housing and plant jobs	Paved parking areas for factories and stores
Concrete masonry walls	Team tracks, ramps, loading platforms
Floors, foundations and footings	Home driveways and garages
Steps and walks	Barn floors and many other farm improvements
Porches and terraces	
Storage yard driveways	

PORTLAND CEMENT ASSOCIATION
Dept. 2-45, 33 W. Grand Ave., Chicago, Ill.

A national organization to improve and extend the uses of concrete . . . through scientific research and engineering field work

The "Quinn Standard"

FOR CONCRETE PIPE

The Quinn Standard is known as the best the world over, wherever concrete pipe is produced and used. Backed by over 30 years service in the hands of hundreds of Quinn-educated contractors, municipal departments and pipe manufacturers who know from experience that **Quinn pipe forms** and **Quinn mixing formulas** combine to produce the finest concrete pipe at lowest cost.

Quinn Heavy Duty Pipe Forms

Hand or wet process. Built to give more years of service—sizes for any diameter pipe from 12 to 84 inches—tongue and groove or bell end pipe—any length.

Quinn Medium Duty Pipe Forms

For making pipe 12 to 60 inches in diameter—any length.

WRITE TODAY

Complete information, prices and estimates sent on request.

QUINN WIRE & IRON WORKS 1603 12th ST. BOONE, IA.

SURE

CONCRETE BRICK CAN BE MADE WITHOUT PALLETS ON THE

JACKSON CONCRETE BRICK MACHINE

Just Think What This Means in Dollars and cents saved in handling and upkeep as well as the cost of the pallets themselves.

Investigate today the most efficient and up to date concrete brick making equipment on the market.

JACKSON & CHURCH CO.
SAGINAW, MICH.

75th Anniversary

COPLAY CEMENT MANUFACTURING CO., Coplay, Penn., has distributed a very attractive 16-page booklet in connection with the celebration of the 75th anniversary since the company was founded. The booklet tells the story of the company's foundation in 1866 by David O. Saylor and its growth during the years which followed. It is replete with pictures of plant and quarry and famous structures and roadways for which cement was furnished.

Use Concrete-Save Steel

PRIORITIES governing the use of steel have caused many contractors to turn to concrete as a solution of the problem. Jos. H. Ehlers, writing in the December 29th issue of *Construction*, is quoted as follows: "The use of concrete block may save some steel; and in certain localities where nails are scarce, this type of construction has been suggested even instead of wood construction to save nails.

"During recent years there has been considerable experience with asbestos-cement pipe as a substitute for metal pipe for water-supply systems, and its use is now suggested as a conservation move. Note, for example, the high consumption of steel and iron for the waterworks projects previously mentioned. These are largely extensions of existing systems and require large quantities of pipe. A large saving can be made here by substituting asbestos-cement pressure pipe. Again, however, there is the problem of available supplies of the substitute material. In one or two cases where this was attempted on a large scale in a single locality at short notice it was found that asbestos-cement pipe soon became almost as difficult to obtain as the metal pipe."

Aggregates for Defense

LOUISVILLE CRUSHED STONE CO., INC., Louisville, Ky., is building a new plant at Huntsville, Ala., to produce aggregates for a government ordnance plant under construction.

New Owners

THE HILLTOP BUILDERS SUPPLY CO., with two ready mixed concrete plants in Cincinnati, Ohio, is now known as Hilltop Building Materials, Inc., since the sale of the company by Adolph Epp to interests headed by I. W. Steele, the new president of the company. This company is one of the important factors in the sale of ready mixed concrete in this territory.

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MATLACK CONCRETE PRODUCTS CO., Newtown, Ohio, has been sold to Newtown Coal & Supply Co. The products plant is not being operated at this present time, but it is planned to resume manufacture about April 1.

P.C.A. Group Insurance

PORTLAND CEMENT ASSOCIATION, Chicago, Ill., has adopted a group program for employes which includes $1,200,000 of life insurance, supplemented by hospital expense and surgery benefits. The plan is being underwritten by the Metropolitan Life Insurance Co., with the employes contributing fixed amounts and the Association bearing the balance of the cost.

Brazil Cement Plant

PLANS are under way to erect a new cement plant near Cabo Frio, State of Rio de Janeiro, Brazil. Production capacity is 60,000 tons monthly.

Launching Towboat

CAPE GIRARDEAU SAND CO., Cape Girardeau, Mo., is launching a new Diesel-powered towboat to haul sand barges in the Mississippi river.

Find Out *Now* How You Can Make More Blocks at LOWER COST Per Unit

MULTICO PNEUMATIC VIBRA-TAMP-PRESS is the proved, low-cost per unit, combination Vibrator, Press and Tamper, all in one. ***Request MULTICO BULLETIN.***

•

Every MULTIPLEX installation is sold to help you make *more blocks* at the *lowest possible cost per unit* . . . and with the *most economical initial investment.*

That is why *each year* MORE AND MORE BLOCK MEN DEMAND *MULTIPLEX.*

Whether you're interested in Power Tampers, Hand Machines, Power Mixers, Flue Block Machines, Power Presses, Hand Press Strippers . . . or the ADVANCED VIBRA-TAMP-PRESS . . . *MULTIPLEX has the answer that can best suit your need.*

WRITE TODAY FOR CATALOG NO. 29, sent free on request.

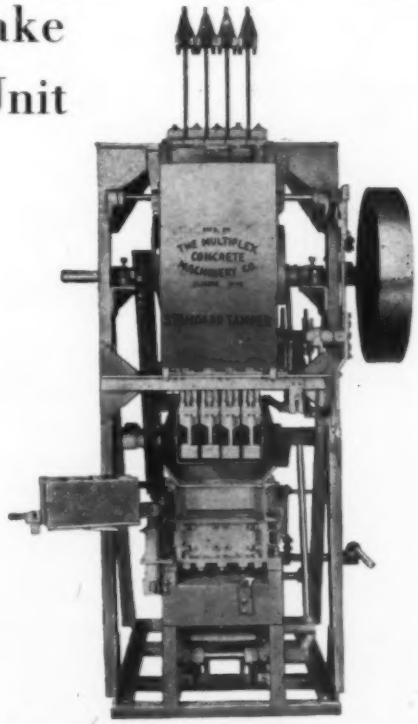
Get the Economical

MULTIPLEX

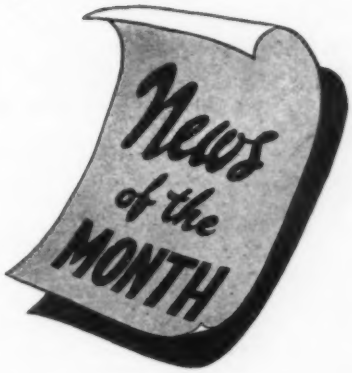
Block Machine Answer

MULTIPLEX CONCRETE MACHINERY CO.

Dept. R. P. O. • ELMORE, OHIO, U. S. A.



STANDARD 8 BAR TAMPER . . . compact . . . strong, durable tamp bars mounted in positive guides for perfect alignment and easy adjustment. Make 3 to 4 units per minute.



Wage-Hour Suit

SMOOT SAND AND GRAVEL CO., Washington, D. C., has settled a back-pay dispute with over 250 employes that began in October, 1938, when the wage-hour law went into effect. The settlement was for $137,000, with individual payments reportedly as high as $1800. Direct negotiations between counsel for the company and the Sand and Gravel Workers AFL union resulted in the settlement and ended a suit filed against the company by the union.

To Build Stone Plant

MAGNET COVE LIME CO., Magnet Cove, Ark., is planning the construction of a limestone crushing plant at Magnet Cove, to produce agricultural limestone and stone for chemical purposes. The deposit has been tested by the State Mineral Survey as a WPA project and was found to contain a calcite that is almost pure. John O. Willson heads the company.

New Source of Gypsum

THE PERMANENTE CORPORATION, San Jose, Calif., has received experimental shipments of gypsum from a new deposit recently opened up at Lovelock, Nev. About 500 tons were shipped to the cement mill for testing. An option has been taken on ground located near that of the United States Gypsum Corporation, eight miles east of Lovelock and owned by Wayne Stoker and Edwin Marker.

New Molding Sand Plant

HARDY SAND CO., Evansville, Ind., recently placed in operation a new molding sand plant at Pigott, Ark. It is equipped from a mechanical standpoint the same as other mills of the company. The mill is laid out for straight line production with facilities on the second floor for dumping and blending of sands.

Chas. E. Seaman, production manager, reporting on the operation of the plant, said that materials from the second floor blending platform go through a rotary dryer to secure the proper moisture content and to assist in the blending operation. From the rotary dryer, the materials are elevated to a disintegrating machine and then flow directly by mechanical means into cars for shipment.

Fire Damage

NORTHWESTERN STATES PORTLAND CEMENT CO., Mason City, Iowa, plant was damaged to the extent of $75,000 recently by fire which swept through two large warehouses. About 70,000 bbl. of portland cement were stored inside the buildings, but the main loss was to the top structures, not to the cement.

Buys Equipment

MAXWELL GRAVEL CO., Dayton, Ohio, has found it necessary to add new equipment to meet the demands for the increasing tempo of business. Recently added equipment includes a Haiss loader, Osgood shovel, Bay City shovel, and an International T.D.9 tractor with bulldozer attachment.

This company believes that its delivery trucks are its best advertising medium. All of its late model International trucks are attractively painted and are constantly kept polished and shining.

Recently completed molding sand plant of Hardy Sand Co., at Piggott, Ark.

Universal Atlas Safety Record

UNIVERSAL ATLAS CEMENT CO., New York, N. Y., operating nine plants, has had only 18 lost-time accidents in 1941. The Northampton, Penn., Leeds, Ala., and Duluth, Minn., plants went through the entire year without a lost-time accident, qualifying them for a re-award of the Portland Cement Association trophy. Each of all the plants has won the award at least twice and, since 1925, the nine plants have qualified for the trophy 39 times.

Certain plants have had unusually fine records that deserve special attention. The Leeds plant had gone 1043 consecutive accident-free days up to January 1, 1942. The Universal, Penn., plant, in the period from 1931 to 1937, had a perfect record for 2078 consecutive days and has won the annual award eight times. At Duluth, the plant ran for 1515 consecutive accident-free days in the period 1931 to 1935. The quarry at Northampton, Penn., had its last lost-time accident over 13 years ago and, up to January 1, 1942, had a record of 1,423,148 accident-free man-hours.

Cement Production Shows Big Gain Over Last Year

BUREAU OF MINES reports that the portland cement industry in December, 1941, produced 13,810,000 bbl., shipped 11,511,000 bbl. from the mills, and had in stock at the end of the month 19,937,000 bbl. Production and shipments of portland cement in December, 1941, showed increases of 23.4 and 4.1 percent, respectively, as compared with December, 1940. Portland cement stocks at mills were 14.7 percent lower than a year ago. The preliminary totals of production and shipments for 1941 show increases, respectively, of 25.9 and 28.5 percent from the final totals for 1940. Estimated total production in 1941 was 163,627,000 bbl., as compared with 130,142,000 bbl. in 1940.

In the following statement of relation of production to capacity the total output of finished cement is compared with the estimated capacity of 160 plants at the close of December, 1940, and 157 plants at the close of December, 1941.

RATIO (PERCENT) OF PRODUCTION TO CAPACITY

	Dec. 1940	Nov. 1941	Oct. 1941	Sept. 1941
The month	51.2	64.8	72.7	78.6	78.3
12 months	50.6	65.4	64.5	63.7	62.5

War Use for Talc

A new use for ground talc which, it is hoped, will not become a permanent use, is smothering incendiary bombs. Canadian talc is now being shipped to Great Britain for this use.

FINANCIAL NOTES

RECENT DIVIDENDS ANNOUNCED

*Alpha Portland Cement Co.	.25	Mar. 25
Lehigh Portland Cement Co.	.37½	Feb. 2
Lehigh Portland Cement Co., pfd.	1.00	Apr. 1
Riverside Cement Co., pfd.	1.50	Feb. 2
**Schumacher Wall Board Corp.	.25	Feb. 16
Schumacher Wall Board Corp. $2 cum. part. pfd.	.50	Feb. 16

*Paid like amount March 25, 1941.
**First since June 27, 1931.

CANADA CEMENT CO., LTD., and subsidiaries, Montreal, Canada, reported for the fiscal year ended November 30, 1941, a net profit of $1,631,059 after depreciation, income and excess profits taxes, etc., equal after annual dividend requirements on 200,869 shares (par $100) of 6½ percent cumulative sinking fund preferred stock, on which there are unpaid dividend accumulations, to 54c a share on 600,000 no-par shares of common stock. This compares with a net profit of $1,332,220 or 4c a common share in the preceding year. The consolidated balance sheet is given below:

CONSOL. INCOME AND SURPLUS ACCOUNT

Years Ended Nov. 30	1941	1940
*Operating profit	$5,724,630	$5,224,221
Add: Invest. income	32,012	28,787
Net earnings	5,756,642	5,253,008
Less: Depreciation	1,750,000	1,500,000
Bond interest	442,283	505,488
Mortgage int.	23,300	25,300
Bond exp. w/o	110,000	110,000
Income taxes	1,800,000	1,780,000
Net profit	1,631,060	1,332,220
Less: Pref. Dividends	1,305,648	1,004,345
Surplus for year	325,412	327,875
Add: Prev. surplus	2,906,989	2,579,114
Earned surplus fwd.	3,232,401	2,906,989
*After deducting:		
Exec. remuner.	89,458	79,315
Directors' fees	10,720	10,720
Legal expenses	2,541	690
Earned per Share:		
Preference	$8.12	$6.63
Paid	6.50	5.00
Common	0.54	0.04
No dividends paid.		
Shares O/s.:		
Preference, $100 par	200,869	200,869
Common, n.p.v.	600,000	600,000

WORKING CAPITAL

Current assets	$6,186,624	$4,969,958
Current liabilities	2,118,040	2,234,619
Working capital	4,068,584	2,735,339

•

ALBERENE STONE CORP. OF VA., New York, N. Y., reported net sales of $66,077 for September, 1941, as compared to $58,900 for September, 1940, with net incomes of $8,001 and $1,166, respectively, before federal taxes. The corporation had the following statement of earnings for the nine-month period ended September 30:

Net sales	$591,329	$466,489
Cost of sales	396,099	328,415
Administration, etc., expenses	108,518	92,331
Depreciation and depletion	25,514	24,861
Taxes	8,100	7,200
Cash discounts	661	766
Operating income	52,437	12,916
Other income	14,886	14,856
Miscellaneous interest	758	.....
Alberoyd div. loss	397	870
[1]Net income	66,168	26,903
[1]Earn. per share	$1.01	$0.41
Number of shares	65,745	65,745

[1] Before Federal taxes.

•

PACIFIC PORTLAND CEMENT CO., San Francisco, Calif., has announced that stockholders of the company failed to approve the company's plan for a capital reorganization designed to eliminate dividends in arrears on preferred stock. The vote taken was approximately 2½ to 1 in favor of the plan. However, the plan required a 75 percent vote of all the outstanding preferred stock and the total affirmative vote was not sufficient for this purpose.

TOWER PNEUMATIC HOSE

A light, easy-handling hose, but with peak mechanical and physical resistance to high pressures, crushing, hard wear, exposure and other elements of severest service—those are the characteristics which have, in the past, gained for Republic's Tower Pneumatic Hose the first preference of a pretentious list of leading industries. Today—harder working, faster working men, directly or indirectly concerned with industry's victory program, are finding each of these factors of Tower's serviceability a true aid to their extended efforts. . . . . REPUBLIC RUBBER DIVISION OF LEE RUBBER AND TIRE CORP., YOUNGSTOWN, OHIO.

Easy to Use•• Hard to Abuse

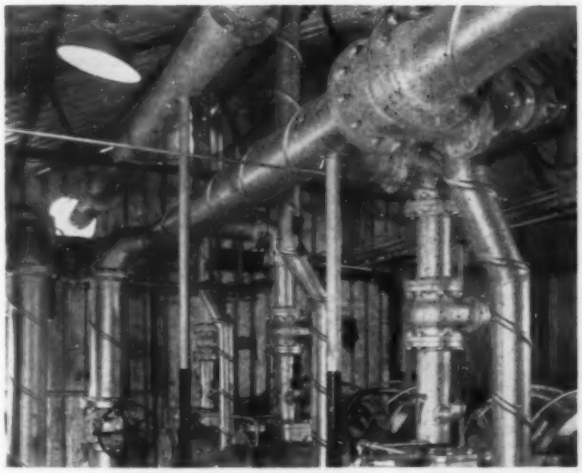
Accredited Republic Rubber Products Distributor

Republic Distributors are, in a sense, as much a part of Republic as any department at the huge plant. As exclusive outlet for Republic Rubber Products in all sections of the country, they are the true sales organization. They are doing an exceptional job in serving present needs for Republic Belting and Hose.

REPUBLIC RUBBER

HOSE • BELTING • MOLDED GOODS
PACKING • EXTRUDED PRODUCTS

SAVE VITAL STEEL
...USE NAYLOR LIGHT-WEIGHT PIPE



If a light-weight pipe can do your job, it's a waste of war material and money to use heavy wall pipe.

Naylor's exclusive Lockseam Spiralweld structure gives you light-weight pipe with extra strength and safety which enables you to use Naylor on applications normally requiring heavier-wall pipe. Sizes 4" to 30" in diameter with all types of fittings and connections for following applications:

AIR LINES
DE-WATERING PIPE
HYDRAULIC MINING
VENTILATING PIPE
WATER LINES

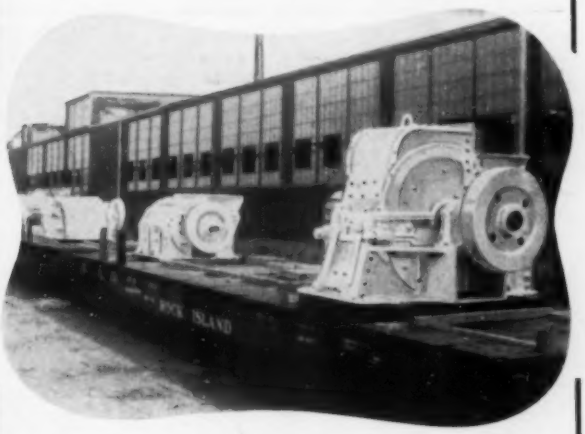
Write for Naylor Catalog
or send specifications for quotation.

NAYLOR PIPE COMPANY
1237 EAST NINETY-SECOND STREET
CHICAGO, ILLINOIS

NAYLOR LOCKSEAM SPIRALWELD **PIPE**

★ ★ ★

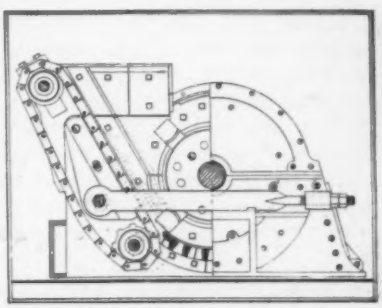
Aluminum Company Relies on DIXIE DEPENDABILITY AND OUTPUT



When production cannot fail, Dixie Hammermills get the call. That's why the Aluminum Company of America, in its magnificent all-out effort to produce more and more aluminum, is using Dixie Hammermills exclusively for all of its crushing needs.

Another important fact is that today 98% of all bauxite produced in this hemisphere is crushed by Dixie Hammermills. Steady production of uniform high quality, even on wet, sticky material, is the basis of Dixie's superiority and the reason for their choice when production cannot fail.

Write for Free Booklet, "More Efficient Crushing of Raw Materials."



DIXIE NON-CLOG HAMMERMILLS

★

Crush ✦ Grind
Pulverize
✦ Shred ✦

DIXIE MACHINERY MFG. CO.
4202 Goodfellow Blvd., St. Louis, Mo.

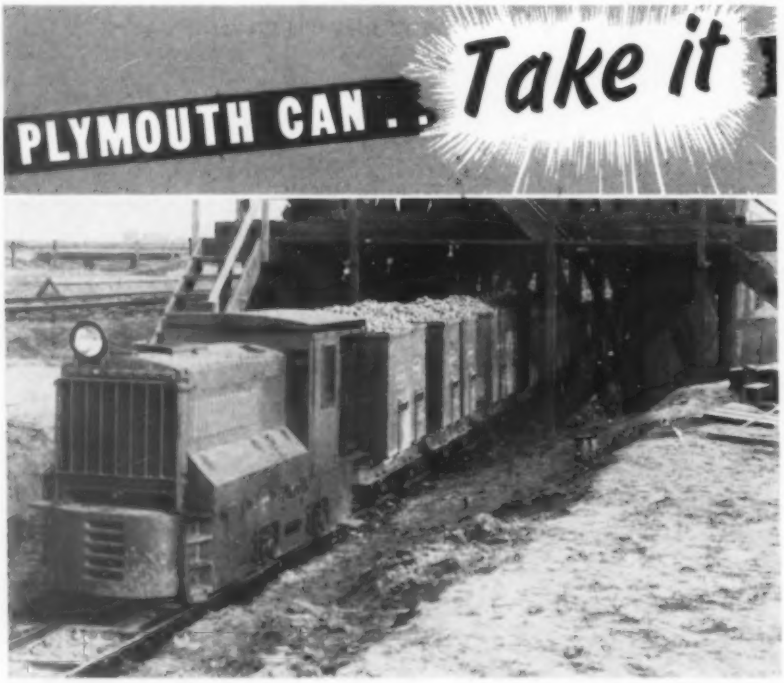
Lime Putty

(Continued from page 65)

To speed the slaking of this lime, a hot water system has been installed and the water for slaking at the start is 150 deg. F. A predetermined amount of water is placed in the bottom of the slaker and lime dumped in on the water through a mechanical gate on the bottom of the lime bin. The slaking process soon boosts the temperature to 200 deg. F., and water and lime are added as necessary to keep the temperature between 200 and 210 deg. F. for 45 minutes. After the lime is completely slaked, the contents of the slaker are passed through a vibrating screen which removes all of the cores and the screened product is pumped into one of the aging tanks with a small centrifugal pump.

From Wood to Coal Firing

THE U. S. GYPSUM CO., Evans, Wash., lime plant may change over its method of firing lime kilns with wood to the use of coal for fuel. Each fall woodcutters sell between 12,000 and 14,000 cords of wood to the lime plant, but the supply is getting more difficult to obtain.



Takes a bigger load . . . Takes it faster
Takes rough usage without a "let down"

● If you want to see how much your daily tonnage capacity can be increased, how much time and money can be saved on haulage—put a Plymouth Locomotive on the job. Plymouth has POWER — to pull more tons per load; SPEED — to keep loads running on time; RUGGEDNESS — to stay in steady service on tough, punishing jobs in quarries, in sand, gravel and clay plants, in batch plant and yard duty. Add to these the easy operation, the extreme flexibility and the marvelous economy of this gasoline-powered locomotive and you see why "Plymouth means Performance"—at its best.

WRITE for FACTS ABOUT

PLYMOUTH GASOLINE and DIESEL LOCOMOTIVES
PLYMOUTH LOCOMOTIVE WORKS
Division of The Fate-Root-Heath Co. PLYMOUTH, OHIO, U. S. A.

Lime Experimentation

(Continued from 72)

up and barely above redness in heat; that between zones, temperature of lime rises rapidly because heat required to heat the stone and heat of reaction is needed, and at these points the temperature difference between lime and gases is high.

It is no wonder that core in dolomite plants—even the largest core—never shows a second core, that is, by stone unaffected by heat. Magnesium carbonate dissociates so readily that it has no chance to pass through the hot zone as carbonate.

The dotted extension of the solid line shows what may have been obtained if the thermocouple had not broken.

A temperature of 1000 deg. F. is very low, but gases withdrawn at point "A" by means of a suction fan to assure a good sample were found to be correspondingly low in temperature, checking the result. Another check is that dolomite kilns even when very low in stone, seldom show red on top, and judging from the test result there should be no redness until the magnesium carbonate is almost completely dissociated. High calcium kilns were deliberately allowed to go low in stone with temperature rising alarmingly, while a similar experiment made on a dolomite kiln although continued for a much longer period had a much lower rise and eventually became constant.

This information all has a great practical value, as it shows that dolomite kilns, low as they are, may, for the capacities obtained from them, still be too high. It suggests important changes in design and bears out the contention that there should be twin offtakes.

Purchases Lime Company

PIONEER LIME CO., Houston, Texas, has purchased the Haden Lime Co. of the same city. Don Nelson is president of Pioneer Lime Co., which has offices in the Fannin Bldg.

Canadian Lime Production

CANADIAN production of lime (quick and hydrated) totaled 716,730 short tons in 1940, compared with 552,209 tons in 1939. The 1940 output comprised 623,803 tons of quick lime and 92,927 tons of hydrated lime. During the year 568,479 tons of hydrated lime were sold or used by lime producers for chemical purposes, while the remainder, totaling 103,830 tons, consisting of both quick and hydrated, was sold or used for building, agricultural, and other purposes.

★

You have to look to ROCK PRODUCTS for Leadership in the Industry

★

Trade DEMPSTER DUMPSTER Mark
Reg. No. 353486

Our entire organization, and plant, is exerting its complete effort in and for the National Defense Program.

We suggest that for operations where any materials are being furnished for defense work, and where efficiency can result in the reduction of hauling costs as much as 50%, that such plants follow the example set by many of the world's largest producers and install DEMPSTER-DUMPSTER-BUCKETRUX, the hauling unit with a multiplicity of detachable bodies.

Write for information — Our Sales Engineers will Serve You.

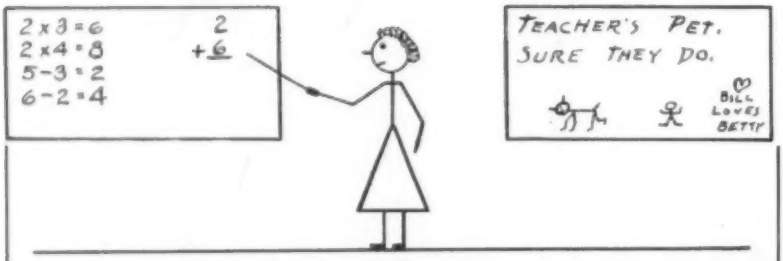
DEMPSTER BROTHERS, Inc.
Manufacturers
Knoxville Tennessee

BUYERS' FREE SERVICE

We are in the market for and would like to receive prices and literature on the items checked below:
RESEARCH SERVICE DEPARTMENT, Rock Products, 309 West Jackson Blvd., Chicago, Ill.

- Admixtures
- Aerial Tramways
- Aggregates (Special)
- Agitators
- Air Compressors
- Air Filters
- Air Separators
- Ash Receptacle Molds
- Asphalt Mixing Plants
- Batching Plants
- Bags
- Bagging Machines
- Balls (Grinding)
- Barges
- Batchers (Weighing)
- Bearings
- Belt Repair Equipt.
- Belting (Conveyor & Elevator)
- Bin Level Indicators
- Bins (Storage)
- Blasting Supplies
- Block Machines, Building
- Boats
- Brick Machines & Molds
- Buckets
- Building Tile Machines
- Bulk Cement Batching Plants
- Bulk Cement Storage Plants
- Bulldozers
- Bullscrapers
- Burial Vault Forms
- Calcining Equipment
- Calcium Chloride
- Carbon Dioxide Plants
- Cars (Industrial)
- Catch Basin Block Machines
- Cement Colors
- Cement Process
- Central Mixing Plants
- Chimney Block Mach. & Molds
- Clarifiers
- Classifiers
- Coal Pulverizing Equipment
- Concentrators
- Concrete Mixers
- Concrete Paints & Coatings
- Concrete Waterproofing & Dampproofing
- Contractors (Cement Mill)
- Conveyors
- Conveyor Idlers and Rolls
- Coolers
- Corn Crib Block and Tile Machines
- Correcting Basins
- Cranes (Crawler & Locomotive)
- Crushers
- Crushing & Screening Plants (Portable)
- Culvert Pipe Mach. & Molds
- Curing Equipment
- Curb Forms
- Derricks
- Dewatering Equipment
- Diesel Engine (Stationary & Automotive)
- Dippers & Teeth
- Disintegrators
- Dragline Cableway Excavators
- Drain Tile Machines
- Dredges
- Dredge Pumps
- Drills (Rock)
- Drill Bits
- Drill Sharpening Machines
- Drill Steel
- Drives (Gear Reduction)
- Dry Batch Conveyors
- Dryers
- Dust Collecting Systems
- Dust Precipitators
- Dust Recovery Plants
- Dynamite
- Electric Motors
- Electrostatic Separators
- Elevators
- Engineering Service (Consulting & Designing)
- Engines (Diesel, Gasoline, Steam)
- Feeders
- Floor Tile Machines
- Flotation Equipment
- Garbage Receptacle Molds (Concrete)
- Garden Furniture Molds (Concrete)
- Generators & M-G Sets
- Guns (Hydraulic)
- Gutter Block Machines (Concrete)
- Hoists
- Hoppers
- Hose
- Hydrators (Lime)
- Induced Draft Fans
- Joist & Slab Machines (Concrete)
- Kilns (Rotary, Shaft, Vertical)
- Laboratory Apparatus
- Lift Trucks
- Lime (Hydrated)
- Lime Handling Equip.
- Lime Plants
- Lime Putty Plants
- Loaders
- Locomotives
- Lubricants
- Manganese Steel Parts
- Mills (Ball, Compartment, Emery, Hammer, Rod, Roll, Tube)
- Mortar Mixers
- Pallets (Steel, Wood)
- Pans, Grinding (Wet & Dry)
- Perforated Metal
- Pipe (Dredge)
- Pipe Molds and Machines (Concrete)
- Plaster Mixers
- Pneumatic Hammers
- Portable Aggregate Plants
- Pulverizers
- Pumps (Pulverized Material)
- Railway Equipment
- Rectifiers
- Recuperators
- Refractories
- Rewashers (Screw)
- Rock Wool Cupolas
- Roofing Tile Machines
- Sand Drags
- Sand & Gravel Plants
- Sand Lime Brick Machinery
- Sand Settling Tanks
- Scales
- Scrapers (Power Drag)
- Screens (Revolving, Vibrating, Etc.)
- Seal Rings
- Septic Tank Molds
- Sewer Pipe Machines
- Shovels (Power)
- Silos (Storage)
- Silo Stave Machines
- Slakers (Rotary)
- Slurry Mixers
- Slurry Pumps
- Slurry Separators
- Slurry Thickeners
- Soft Stone Eliminators
- Speed Reducers
- Structural Steel Fabrication
- Tampers (Hand & Power)
- Tanks (Storage)
- Tires
- Tractors
- Transit Mixers
- Trucks (Agitator)
- Trucks (Dump)
- Trucks (Industrial)
- Trucks (Mixer Body)
- Unloaders
- Unloaders (Boat)
- Unloaders (Box Car)
- V-Belting
- Vibrators (Bin)
- Wagons (Dump)
- Wall Forms & Machines (Concrete)
- Washers (Sand, Gravel & Stone)
- Welding & Cutting Equipt.
- Well Curbing Mach. & Molds
- Wire Cloth
- Wire (Copper, Iron & Steel)
- Wire Rope
- Wire Rope Fittings

City _____
Individual _____ Title _____
Address _____
Firm Name _____ State _____



WHAT'S YOUR PROBLEM?

Fine Screening
Coarse Screening

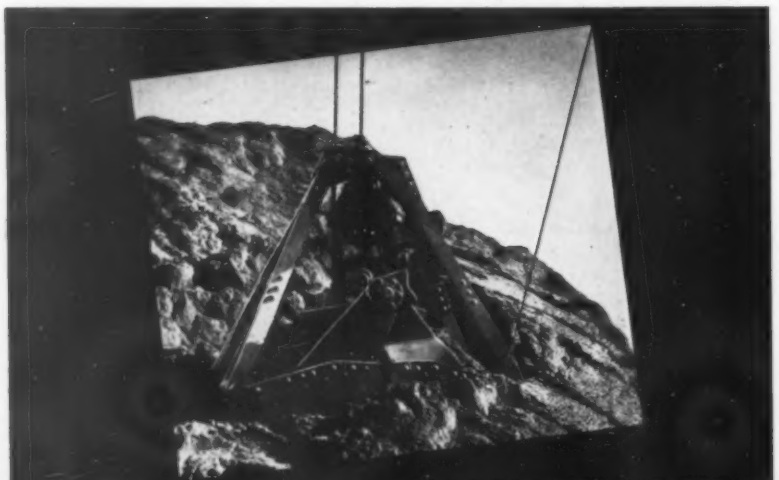
WET — STICKY — DRY

SECO

VIBRATING SCREENS
WILL HELP YOU SOLVE IT

Submit Your Inquiry to Screening Experts

SCREEN EQUIPMENT CO., INC.
9 LAFAYETTE AVE., BUFFALO, N. Y.



YOU CAN BANK ON A BROWNHOIST BUCKET

Industrial Brownhoist buckets represent the last word in good design and construction. Light weight is combined with unusual strength. Rope wear is reduced to a minimum. Because of the clean, deep bites they take, hand shoveling is practically eliminated. Standard buckets on hand ready for immediate delivery. Write for further facts.

INDUSTRIAL BROWNHOIST

BAY CITY, MICHIGAN • DISTRICT OFFICES: NEW YORK, PHILADELPHIA, CLEVELAND, CHICAGO

Diesel Power

(Continued from page 63)

The power is taken from the engine by a shaft 13¾ in. long, supported by a pedestal on timbers and located as an outboard bearing. This mounts a pulley 10 in. diameter having an 11-in. face. Using a 10-in. flat belt, the power is transferred from this pulley to a jackshaft mounted on timbers and located about 10 ft. ahead of midship. The jackshaft is 3 in. in diameter, 6 ft. long and is turned by a 48-in. pulley. A spring loaded idler is used on the belt just behind the engine power take-off. The go-ahead belt is crossed. The engine and jackshaft pulley centers are about 11 ft.

Power Transmission

The power is transferred from the jackshaft to the main drive shaft in the stern, a distance of 25 ft. with a pair of 10-in. wide flat belts. The belts turn a pair of 38-in. clutch-controlled pulleys on the stern shaft. The "go-ahead" belt is crossed to provide forward motion. Reverse wheel operation is obtained by a second, uncrossed belt.

In the stern of the boat, the paddle wheel is driven from the starboard side by the main drive shaft which is 2½ in. in diameter by 10 ft. long. It is fitted with a nine-tooth sprocket. The power is transferred to the 36-tooth sprocket on the wheel with a 2½-in. pitch chain. The chain centers are 8 ft. The engine, which operates at 1350 r.p.m., turns the paddle wheel only 33 r.p.m.

The owners and operators claim this tow boat does much better work with the Diesel engine, and that it is much cheaper to run, has more power and handles better, making much better speed up the river. The operation is highly satisfactory, very efficient, and the crew understands the operating requirements and obtains lower operating cost, as well as reduced maintenance.

Planning for the Future

A RECENT SURVEY just released by the National Industrial Advertisers Association shows that despite the heavy armament program and in the face of the most active selling market in our history, the great majority of industrial companies have been maintaining and in many cases have actually increased their advertising efforts. Reports from over 300 industrial advertisers are represented in this survey. Copies of the report may be obtained by writing the association headquarters at 100 E. Ohio Street, Chicago. The price is $2.50 each.

Shipping Cement

(Continued from page 56)

load bulk in any pre-determined amount.

Three loading tracks are provided for the pack house and one track is provided for the bulk-loading station. All cars for loading are spotted by electric car movers conveniently located.

Bag Storage

Paper bags are stored in a large room on a level above the packing machines. Chutes are provided in this storage room for delivering bags or sacks directly to the machine operator's decks. The movement of bags and sacks from the lower level to this storage is all handled by means of an automatic platform elevator.

Stocks of special cements in packages not manufactured at this mill are stored on the lower level in a long, one-story adjoining building known as the bag storage. This building also provides storage for sacks. The sack room for cleaning and classifying cloth sacks returned by customers occupies the east end of this structure.

The installation is complete with a locker room, wash room and shower facilities for the men working in this department. Heat for the locker room, bag storage and sack room is provided by an automatic oil-burning boiler located in the basement of the building.

The building itself is constructed of reinforced concrete and the design is modern and pleasing (Fig. 9).

The flexibility and high capacity of this installation reduce the time required by inspectors from outside laboratories for making their shipments. All features of the installation are carefully designated and diagrammed so that the flow of cement is quickly and easily verified by the inspectors. A room in the new laboratory building is reserved for their convenience.

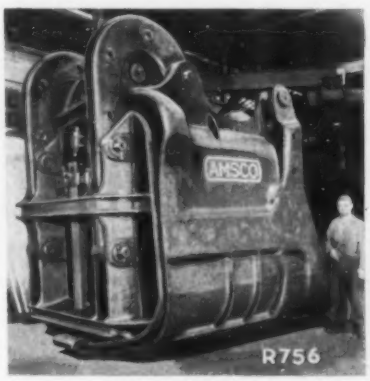
Building Silica Plant In Washington

MINERAL PRODUCTS CO., Seattle, Wash., is building a new silica plant at Chewelah, to be completed in March. A deposit has been opened up containing sand of 98 percent SiO_2 and the plant will start out with a capacity of 50 tons of washed, graded silica per day. Later capacity will be doubled. The plant will comprise drain bins and equipment for washing, classifying and concentrating the sand, with a rotary dryer and screens. J. L. Ainsworth, Seattle, is engineer in charge of the construction.

Victories *Are Not* Won On The Battlefields Alone

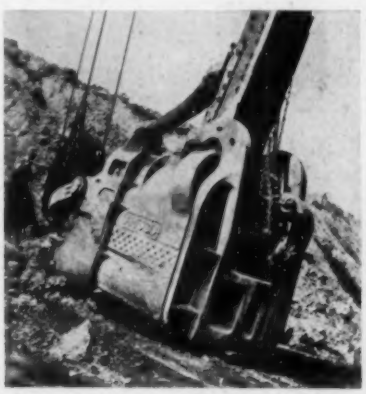
They're won on the production lines, in the mills, the mines, the wheat fields. The defeated Central Powers found this out in World War I.

Amsco Power Shovel Dippers are mustered for Defense in hundreds of mines, quarries and pits, and on construction projects and dredging operations. Digging materials vital to defense production, scooping out excavations for defense plants, gouging out rock and gravel for cement and road materials, dipping up sand and muck for harbors, slips and drydocks.



Made of Amsco Manganese Steel, "the toughest steel known," Amsco Dippers resist abrasion and impact longer than other metals, and their design contributes fast, full loading and clean dumping. With Amsco Renewable Lip Dippers, it is unnecessary to scrap entire front when lip has become worn.

They're digging in for Defense—an Amsco 16 yd. Dredge Dipper recently shipped for harbor work (R756)—an Amsco 12 yd. Renewable Lip Dipper at an Illinois strip mine—a new Manganese Steel dipper front (R688) to renew an Amsco-Missabe 2½ yd. Dipper used in a road stone quarry. This type of dipper is widely used for the most abusive services.



Amsco
AMERICAN MANGANESE STEEL DIVISION
OF THE AMERICAN BRAKE SHOE & FOUNDRY CO.
Chicago Heights, Illinois

Manganese Steel Castings for shocks and abrasion.
Chromium-Nickel Alloy Castings for heat and corrosion resistance.
Power Shovel Dippers. Dredge and Industrial Pumps.
Welding Materials for reclamation and hard-surfacing.

FOUNDRIES AT CHICAGO HEIGHTS, ILL.; NEW CASTLE, DEL.; DENVER, COLO.; OAKLAND, CALIF.; LOS ANGELES, CALIF.; ST. LOUIS, MO. OFFICES IN PRINCIPAL CITIES

Price Fixing

FEDERAL JUDGE Guy L. Fake recently imposed fines against some of the 16 concerns and 32 persons charged with defrauding to the extent of $250,000 on W.P.A. projects in Northern New Jersey. Companies, including some producers of aggregates, were fined $1000 each, while several company officals were fined as high as $2000 each. Companies fined included Samuel Braen's Sons, Inc., Hawthorne; Brooks-Wright, Inc., Preakness; Burton Canfield, Inc., Cedar Grove; Harrison Supply Co., East Newark; Consolidated Stone and Sand Co., Morristown; Great Notch Corp., Newark; Little Falls Sand and Gravel Co., Cedar Grove; Passaic Transit Concrete Co., Passaic; Paterson Crushed Stone Co., Morristown; and Tidewater Stone and Sand Supply Co., Hackensack. The government charged the defendants with fixing arbitrary prices of $2 per cu. yd. on sand and $3 for coarse aggregate. Counsel contended that no moral crime had been committed by the defendants, explaining that the dates covered by the indictment, August 1, 1935, and May 31, 1936, was after the collapse of the NRA, when efforts were being made to maintain fixed prices. It was also contended that the amount involved was much smaller. Some of the concerns entered not guilty pleas.

More THAN 75 TYPES
OF INDUSTRIAL TRACK AND TRACKLESS CARS
KOPPEL
More than 75 specific types of industrial cars are production-made to keep initial cost down . . . heavy-duty constructed to give maximum service with least maintenance . . . and each type is designed to do specific jobs more dependably than any other car you could use.
For your track or trackless hauling you will profit by investigating the Koppel line of industrial cars. Why not call in a Koppel engineer on your problems today?
LET US SEND you the Koppel bulletin describing more than 75 types of proved, dependable Koppel cars.
PRESSED STEEL CAR CO., INC.
(KOPPEL DIVISION)
PITTSBURGH, PA.
KOPPEL

Suspend New Core Drill Fittings Standard

WAR has interposed its influence to delay changes in existing standards. I. J. Fairchild, Chief, Division of Trade Standards, Department of Commerce, has advised that the Diamond Core Drill Manufacturers Association has recommended that the effective date for the new Diamond Core Drill Fittings, Commercial Standard CS17-42, be extended one year. This action was taken due to the difficulty in securing raw materials because of the priority situation which is likely to become worse. In addition the changeover in shop production will certainly slow up manufacturing during this critical period.

Venezuela to Get New Cement Plant

A FEDERAL GOVERNMENT REPORT states that a cement plant having an initial annual productive capacity of 50,000 metric tons is being planned by a company at Guanta, State of Anzoategui, Venezuela.

Sand-Lime Brick Production and Shipments

EIGHT active sand-lime block and brick plants reported for December and eight for November, 1941, statistics for which were published in January, 1942.

AVERAGE PRICE FOR DECEMBER

	Plant Price	Delivered Price
Grand Rapids, Mich.	.....	$14.00
Detroit, Mich.	.....	16.00
Sebewaing, Mich.	$10.50	.....
Saginaw, Mich.	12.00	.....
Seattle, Wash.	16.50	18.50
Mishawaka, Ind.	.....	.....
St. Louis, Mo.	.....	.....
Berlin, N. J.	12.00	15.00

STATISTICS FOR NOVEMBER AND DECEMBER

	*November	**December
Production	3,253,810	2,099,560
Shipments (rail)	78,500	205,000
Shipments (truck)	3,134,427	1,374,305
Stock on Hand	1,236,030	1,516,348
Unfilled Orders	800,000	1,270,000

* Eight plants reporting: incomplete, one not reporting stock on hand and three not reporting unfilled orders.

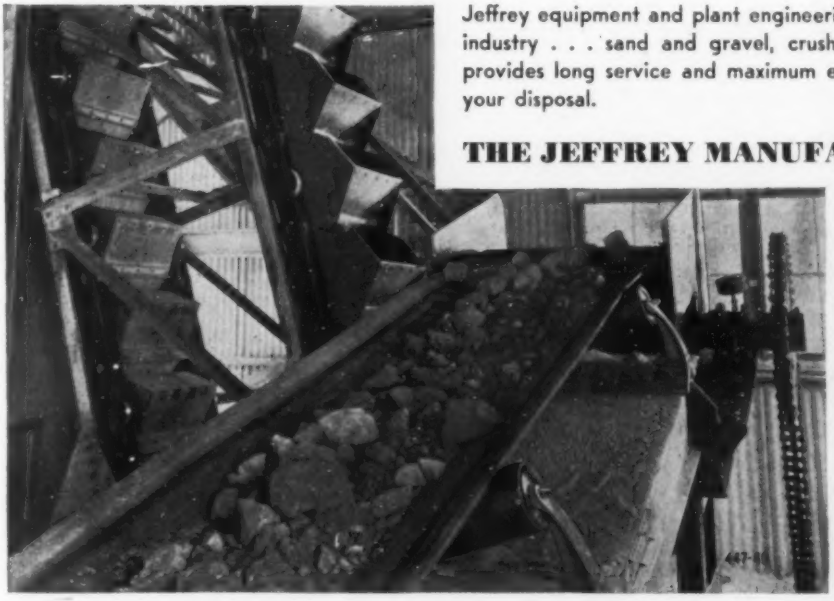
** Eight plants reporting: incomplete, one not reporting stock on hand and two not reporting unfilled orders.

Correction

ON PAGE 108 in the January, 1942, issue of ROCK PRODUCTS, the length of the boom of the 3½-cu. yd. Lima shovel was given as 19 ft. This dimension should have been given as 26 ft.

Jeffrey

CHAINS	FEEDERS	PULVERIZERS	SHREDDERS
CONVEYORS	GRINDERS	PULLEYS	SPROCKETS
CAR PULLERS	IDLERS (Belt)	MONO-VEYORS	TAKE-UPS
CRUSHERS	GEARS	SCREENS	WAYTROLS
ELEVATORS	PORTABLES	TRANSMISSION	MACHINERY



Jeffrey equipment and plant engineering cover the entire stone products industry . . . sand and gravel, crushed stone and cement. Equipment provides long service and maximum economy. Our rich experience is at your disposal.

THE JEFFREY MANUFACTURING COMPANY

935-99 North Fourth Street

COLUMBUS, OHIO

Baltimore	Cleveland	Pittsburgh
Birmingham	Denver	Philadelphia
Boston	Detroit	New York
Buffalo	Harlan	Scranton
Chicago	Huntington	Salt Lake City
Cincinnati	Houston	St. Louis
	Milwaukee	Terre Haute

Jeffrey bucket elevator (heavy duty type) and belt conveyor are shown at left. They are handling crushed stone in a large quarry operation. Jeffrey units will speed up schedules—will soon pay for themselves.

LEADING MILL REPLACES

. . . with another

GAYCO

CENTRIFUGAL AIR SEPARATOR

A replacement order . . . and "very satisfactory performance . . . 24 hours service 5 or 6 days a week" . . . tells a typical GAYCO "performance story," but more outstanding when you consider that one of the most difficult materials, Graphite, is being handled with a separation of 99.5 passing a 325 mesh.

You may not be handling Graphite, but GAYCO can solve your air separating problem.

The secret of the record performance of GAYCO AIR SEPARATORS is the patented Centrifugal Sizing Fan, giving a more uniform product, greater capacity, cleaner tailings, saves power and not affected by feed-variation. Range from 60 to 400 mesh.

GET THE FACTS! A copy of the new "tell-all" GAYCO Catalog, giving valuable and useful information, is yours for the asking. Send for it today.

UNIVERSAL ROAD MACHINERY CO.

RUBERT M. GAY DIVISION
117 Liberty Street
NEW YORK, N. Y., U. S. A.

Main Office and Factory
Kingston, N. Y.

Canadian Representative
F. H. Hopkins & Co., Ltd.
340 Canada Cement Bldg.
Montreal, Que., Can.

GAYCO CENTRIFUGAL SEPARATORS

Kindly send me a copy of the New Gayco Catalog featuring the advantages of Gayco Separators and data on materials that can be handled. We are interested in separating the following products:

.....

Name ..... Company .....

Title ..... Address .....

Traffic and Transportation

PROPOSED RATE CHANGES—The following are the latest proposed changes in freight rates up to and including the week of Jan. 17:

Central

Sup. 1 to WDA 68670. **Sand**, C. L., WDA 68670, DB 3103, dated Oct. 21, 1941, covering proposal to cancel rate of 356c per net ton on, from Conneaut and Ashtabula, O., to Toronto, Ont., published in Item 310, page 23, N. Y. C. & St. L. R. R. Trf. 835-F, B. & L. E. R. R. Trf. I. C. C. 1128 and similar rate in other individual lines' tariffs, is hereby withdrawn from docket on request of proponent.

68969. **Crushed stone**, C. L. Establish on, from Keeport, Ind., to Kingsbury (Dillon), Ind., 99c per net ton, via usual available routes, applicable only on Indiana state traffic.

69001. **Lime**, C. L. Cancel rates on, from Louisville, Ky., and New Albany, Ind., to Cincinnati, O., published in Item 300, C. F. A. L. Trf. 232-Q. Classn. basis to apply.

69002. **Limestone, agricultural, unburnt** (not ground or pulverized), in bulk, in open top cars, C. L. (See Note 3). Establish on, from McVittys, O., to Fernwood, Unionport, O., 160c; Waco, O., 138c per net ton. Route: To Fernwood and Unionport, O.—Via N. Y. C. (C.), Urbana, O., P. R. R.; to Waco, O.—Via N. Y. C. (C.), Clyde, O., W. & L. E.

69017. **Sand** (except industrial) and **gravel**, in open top cars, C. L. Establish on, from Clyde, W. V., to Hinton, W. Va., 143c per net ton, via N. Y. C. R. R. (W.) —Charleston, W. Va.—C. & O. Ry.

69020. **Limestone, agricultural, unburnt**, in bulk, in open top cars, C. L. Establish on, from Genoa and Martin, O., to Bellaire, O., 171c; Cambridge, Lore City, Neffs, O., 160c; Newark, O., 138c; New Concord, Quaker City, O., 160c; Zanesville, O., 149c per net ton.

69022. **Sand**, ground or pulverized, in box cars, C. L. (See Note). Establish on, from Toledo, O., to Michigan and Canadian destinations, rates as shown below:

Proposed Rates in Cents Per Net Ton from Toledo, O.

To	Prop.
Bay City, Mich.	194
Benton Harbor, Mich.	218
Detroit, Mich	145
Flint, Mich.	182
Ionia, Mich.	194
Jackson, Mich.	157
Monroe, Mich.	109
Mt. Clemens, Mich.	157
Muskegon, Mich.	230
Rockwood, Mich.	121
St. Joseph, Mich.	218
Saginaw, Mich.	194
Wyandotte, Mich.	132
Hamilton, Ont.	332
Kingston, Ont.	486
Montreal, Que.	541
Orillia, Ont.	486
Oshawa, Ont.	431
Port Hope, Ont.	486
Sault Ste. Marie, Ont.	734
Sherbrooke, Que.	613
Sorel, Que.	695
Toronto, Ont.	376
Welland, Ont.	332

69024. **Sand**, all kinds, and **gravel**, in open top cars only, C. L., and in closed cars. Establish on, from Havens, O., to Orville, O., 110c per net ton.

69025. **Sand**, all kinds and **gravel**, C. L. Establish on, to Cheviot, O., from Vinton, Bidwell and Kerrs, O., 149c in open cars and 171c per net ton in box cars, via C. & O. Ry., Dundas, O., B. & O. R. R., Cincinnati, O. and C & O. Ry.

69026. **Limestone, agricultural unburned and agricultural limestone screenings**, in bulk, in open-top cars, C. L. Establish on, from McVittys, O., to Frazeyburg, O., 127c per net ton via N. Y. C. (C), Columbus, O., P. R. R. and N. Y. C. (C.), Urbana, O., P. R. R.

Note 1—Minimum weight marked capacity of car.

Note 2—Minimum weight 90% of marked capacity of car.

Note 3—Minimum weight 90% of marked capacity of car, except that when car is loaded to visible capacity the actual weight will apply.

Note 4—Reason. No present or prospective movement.

Note 5—Reason: Comparable with rates from other origins in immediate vicinity.

Note 6—Rates will not apply on shipments in cars with tarpaulin or other protective covering. In such instances the rates applicable on shipments in box cars are to be assessed.

Note 7—The oil, tar or asphaltum not to exceed 10% of weight of the commodity shipped, the shipper to so certify on shipping order or bill of lading.

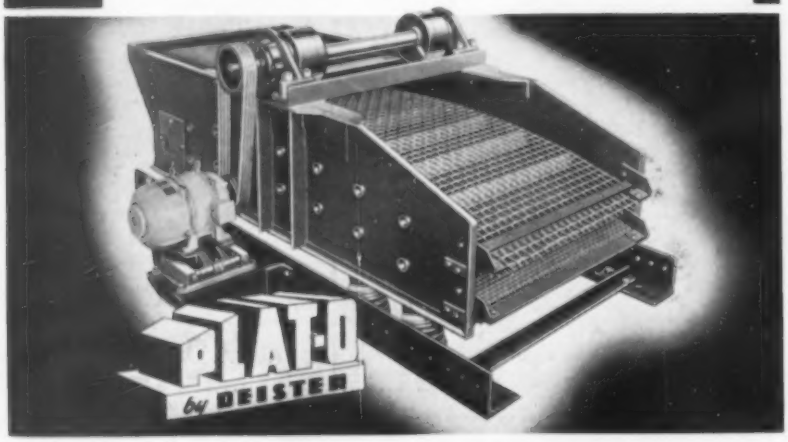
---

8 WAYS TO SAY—
There's Profit in using
PLAT-O by DEISTER

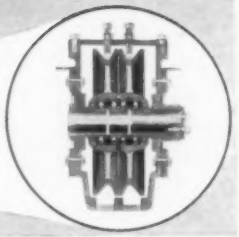
One aggregate producer may say that it's the Deister PLAT-O Vibrating Screen's opposed elliptical throw — its low headroom, accurate grading and high capacity — that accounts for its consistent ability to turn out more tons at a lower cost per ton. Another may give the credit to PLAT-O's powerful, positive high speed. Both are right because there are *eight ways* to account for PLAT-O's superior performance.

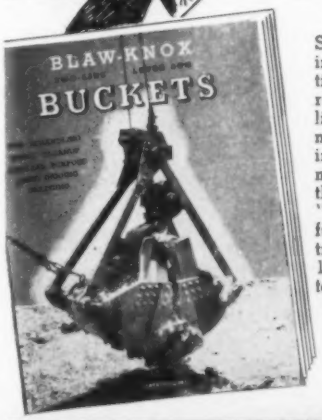
The others include: Its adjustable stroke . . . its oil (not grease) lubrication . . . its automatic screen cloth tension and easy change of each deck independently . . . its fully cushioned vibration . . . its simple, two-bearing construction . . . and its low power requirements. All of these are outstanding features of Deister PLAT-O Vibrating Screens which will assure you of more profits on your job.

DEISTER MACHINE CO. FORT WAYNE, INDIANA



BLAW-KNOX BUCKETS have SEALED BALL BEARING SHEAVES





Sealed ball bearing sheaves in the lever arm reduce lost time and expense of bearing replacement, increase cable life and reduce friction, materially improving operating efficiency. This, and many other better features, that make BLAW-KNOX the "wise" buy in buckets are fully explained and illustrated in NEW CATALOG 1757. Send for your copy today.

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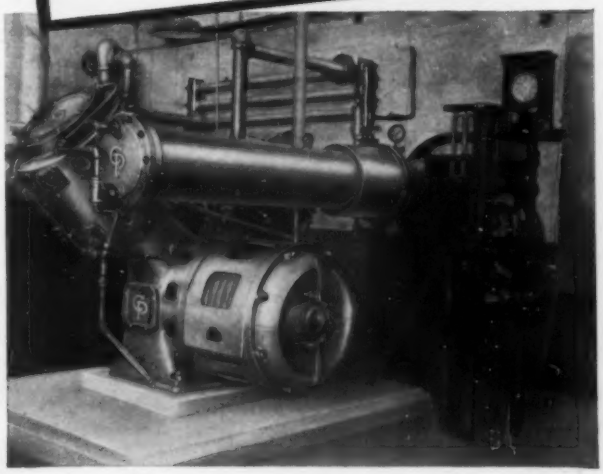

● Shipped intact, quickly installed with only a simple, inexpensive foundation, CP Type "Y" Compressor solves the problem of the new plant that must have air quickly. Extremely compact and requiring small floor space, it is ideal for the crowded plant that must have additional air.

Chicago Pneumatic Type "Y" Compressors are of the heavy duty, double-acting type. Two-stage units are available in capacities of 300 to 900 cubic feet per minute, 80 to 125 lbs. of pressure, with built-in or coupled induction or synchronous motor, or with V-belt drive. Units for other pressures are also built. Bulletin on request.

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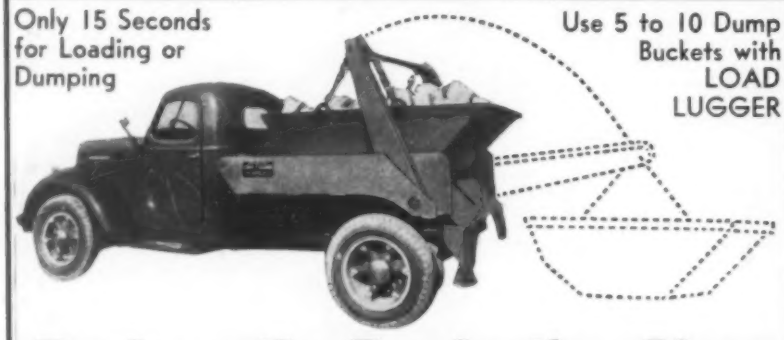

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Beaver Falls, Penn.

← 1¼-Yard Shovel

69138. **Limestone, agricultural unburnt,** in bulk, in open top cars, C. L. Establish on, from Genoa and Martin, O., to East Orwell, O., 149c; Williamsfield, O., 160c per net ton. Route: To East Orwell, O. Via N. Y. C. (W.), Ashtabula, O., P. R. R. To Williamsfield, O. Via N. Y. C. (W.) direct.

69145. **Limestone, ground or pulverized,** unburnt, C. L., min. wt. 60,000 lb. Establish on, to Van, W. Va., from Northwestern Ohio Group 1 origins, 259c; Marble Cliff and W. Columbus, O., 226c per net ton.

69147. **Lime, common, hydrated, quick or slaked,** C. L., min. wt. 50,000 lb. Establish on, from Sault Ste. Marie, Mich., to Flint, Mich., 15c, via D. S. S. & A., Mackinaw City, Mich., N. Y. C. (M.), Bay City, Mich. and P. M.

69151. **Sand,** all kinds, and **gravel,** C. L., in open top equipment. (See Note 3.) Establish on, from Bremen, O., to Cheviot, O., 138c per net ton.

69167. **Ganister rock,** not ground, C. L., (See Note 3). Cancel commodity rates on, from Youngstown, O., to Bessemer, Ellwood City, Etna, Homestead, New Castle, Pittsburgh, Rankin and Wylie (Clairton), Pa., published in Item 160, B. & O. R. R. Trf. 230 and P. & L. E. R. R. Trf. I. C. C. 3311, Classn. basis to apply in lieu thereof.

69178. **Limestone spawls** (chips or fragments), in open top cars, except when car is loaded to full cubical or visible capacity, actual weight will apply. Establish on, from Marlo, Mosher and Ste. Genevieve, Mo., to New York, N. Y., 589c per net ton (See Note). Amend Item 7312 series, C. F. A. Trf. 218-M.

69194. **Industrial sand,** per usual description (a), (b) and (c). Establish on, from M. & S. Valleys Group 20 to Houlton, Me., (a) 528c, (b) 575c and (c) 528c; to Presque Isle, Me., (a) 539c, (b) 587c and (c) 538c per net ton.

69209. **Stone,** C. L. Amend Agency and individual lines' tariffs publishing rates on various kinds of stone, C. L., between points in Official territory, including Extended Zone C in Wis. and W. T. L. "Northwest" territories as follows:

Stone, viz.: Rip rap, rubble and quarry scrap. Increase rates to reflect full advances authorized under Ex Parte Nos. 115 and 123; i.e., 10 percent with min. of 20c per net ton, where the present rates do not now include such increases.

69225. **Sand, ground or pulverized,** C. L. Establish on, from Ford City, Penn., to Suspension Bridge, N. Y., 242c per net ton.

69226. **Sand,** all kinds, **and gravel,** in open top cars, C. L., (See Note 3). Establish on, from Brown Siding, O., to Cheviot, O., 149c per net ton, via B. & O. R. R., Cincinnati, O., C. & O. Ry.

69258. **Industrial sand.** Establish on, from so-called Vassar Group, viz.: Vassar, Wampson, McHale, Juniata and Watrousville, Mich., to Hasbrouck Heights, N. J., 396c per net ton, in open and closed cars.

69282. **Crushed stone,** in bulk, in open top cars only; **crushed stone screenings,** in bulk, in open top cars only; **tailings,** in bulk, in open top cars only, C. L. Establish on, from Bluffton, Ind., to Sidney, Ind., 72c per net ton.

69290. **Stone, rip rap, rubble and spawls,** C. L. Establish on, from Holland, O., to Malinta, O., 66c per net ton, via N. Y. C. (W), Delta, O., D. T. & I. R. R., to expire April 30, 1942.

69336. **Fluorspar** in packages or in bulk, C. L., ex-river, min. wt. 40,000 lb. Establish on, from points in the Pittsburgh Dist., viz.: Allegheny (Pgh. North Side), Aliquippa, Bessemer, Colona, Etna, Glassport, Glenwood, Hays, Junction Tfr. (33rd St. Sta., Pittsburgh), McKeesport, Munhall (Kenny Yard), New Kensington, Pittsburgh, Rankin, Rochester, South Duquesne, Munhall and Mifflin Jct., Pa., to

Easton, Penn., 440c per net ton, via usual available routes.

69456. **Sand**, all kinds, and **gravel**, C. L. Establish on, from Lakeville, O., to various Ohio points, rates as shown below:

From Lakeville, Ohio

(Rates in cents per net ton)

To Representative	*Proposed Rates	To Representative	*Proposed Rates
Mansfield, O.	72	Cleveland, O.	110
Orville, O.	77	Columbus, O.	110
Lexington, O.	83	Findlay, O.	116
Crestline, O.	88	Niles, O.	116
Massillon, O.	88	Bellefontaine, O.	116
Barberton, O.	88	Youngstown, O.	127
Canton, O.	94	Toledo, O.	127
Bucyrus, O.	94	Lima, O.	127
Akron, O.	94	Zanesville, O.	127
Medina, O.	99	Painesville, O.	127
Marion, O.	99	Delphos, O.	127
Coshocton, O.	105	Wapakoneta, O.	127
Alliance, O.	105	Piqua, O.	138
Ravenna, O.	105	Chillicothe, O.	138
Bellevue, O.	105	VanWert, O.	138
Delaware, O.	105	Xenia, O.	138
Westerville, O.	105	Miamisburg, O.	149
Elyria, O.	110	Marietta, O.	149
Sandusky, O.	110	Hamilton, O.	160
Fostoria, O.	110	Cincinnati, O.	171
Atlas, O.	110	Hillsboro, O.	171
Lorain, O.	110	Ironton, O.	182

* Rates in open top equipment. In closed equipment rates will be 115 percent thereof.

69521. **Sand**, industrial or **gravel**, in open top equipment, C. L. (See Note 3). Establish on, from Oil City, Penn., to Geneva, Penn, 77c; to Stony Point, Penn., 88c; from West Middlesex, Pa., to Geneva, Penn., 88c; to Stony Point, Penn., 77 per net ton.

69534. **Lime, common, hydrated, quick or slaked**, C. L. Establish commodity rates on, from Detroit, Mich., to Black Rock, Buffalo, Niagara Falls and Suspension Bridge, N. Y., 17c, min. wt. 30,000 lb.; 13c, min. wt. 50,000 lb. Not subject to C. F. A. L. Trf. 470-B.

69536. **Sand, all kinds, and gravel**, in open top cars, C. L., (See Note 3). Establish on, from Sandusky, O., to Cheviot, O., 171c per net ton.

69537. **Limestone**, ground or pulverized, unburnt, C. L., min. wt. 60,000 lb. Establish on, from Durbin, O., to Van, W. Va., 226c per net ton.

69539. **Mineral wool (rock or slag wool)**, metal reinforced, in packages, min. wt. 30,000 lb., subject to Rule 34 of Official Classn.; plain or saturated: batts, with or without paper backing or wrapping (See Note A); other than batts (See Note A), min. wt. 24,000 lb., subject to Rule 34 of Official Classn. Establish on, from Hartman, Ind., to Akron, O., 30c; Battle Creek, Mich., 24c; Cincinnati, O., 26c; Cleveland, O., 30c; Columbus, O., 27c; Dayton, O., 23c; Flint, Mich., 29c; Jackson, Mich., 25c; Lansing, Mich., 27c; Pittsburgh, Pa., 36c; Saginaw, Mich., 30c; Toledo, O., 25c; Wheeling, W. Va., 34c.

Note A: Ratings also include necessary paper for installation.

69553. **Limestone**, ground or pulverized, C. L., min. wt. 80,000 lb. Establish on, from Speeds, Ind., to Tallacoosa, Ala., 260c per net ton.

Trunk Line

40405 (shippers). To establish the same rates on **limestone, calcined**, containing not in excess of 5½ percent potash, with alternating min. wt. of 30,000 and 50,000 lb., from Security, Md., to points in South Carolina and Georgia, the same as now published on lime, carloads, in SFTB Tariff No. 382-B, F. D. Miller, agent, I. C. C. No. 582.

40410 (shippers). **Sand** (other than industrial), C. L., in open top cars, without tarpaulin or other protective covering. (See Note 3) from West Elizabeth, Penn., to Vandergrift, Penn. 88c, and to Youngstown, Ohio, $1.10 per net ton and from Courtney, Penn., to Vandergrift, Penn., 68c, and to Youngstown, Ohio, $1.16 per net ton. Reason: (See Note 5).

Sup. 1 to 40410 (shippers). **Sand** (other than industrial), in open top cars without tarpaulin or other protective covering (See Note 3), from West Elizabeth and Courtney, Penn., to Farrell, Penn., $1.10 per net ton.

40411 (increase) (carriers). To cancel the following commodity rates published in A C. L. R. R. Tariff I. C. C. No. B-2940, V. C. C. No. 150, applying between Suffolk, Va., and Richmond and South Richmond, Va.:

(Rates in cents per net ton)

Item	Commodity	Rates
2140	Sand and gravel, in straight or mixed carloads	139
2450	Sand N. O. S., C. L.	166
3590A	Stone, crushed, C. L.	139

Reason: Account no present or prospective movement.

40413 (shippers). **Ground feldspar**, C. L., min. wt. 60,000 lb., from Broadalbin, N. Y., to Solvay, N. Y., 15c per 100 lb., in lieu of current class 21 rate of 17c per 100 lb. Reason: Comparable with rates from other points in immediate vicinity.

40444 (shippers). **Bird gravel** or **sand**, C. L., min. wt. 50,000 lb., from New York, N. Y., to Chicago, Ill., 33c per 100 lb. Reason: (See Note 5).

40447 (shippers). (A) **Sand and gravel**, in open top cars, etc., per Group B, Note 10 of N. Y. C. R. R. Tariff I. C. C. N. Y. C.

40452 (shippers). **Crushed stone**, C. L., (See Note 3) from Easton (Bushkill Station), Penn., to Baltimore, Md., $2.00 and to Washington, D. C., $2.10 per net ton, in lieu of current 6th class rates of 21c and 23c per 100 lb. Reason: (See Note 5).

40462 (shippers). **Limestone, broken, crushed, ground** or **pulverized**, C. L., min. wt. 60,000 lb., from Pleasantville, N. Y., to Potomac Yard, Va., $2.92 per net ton

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in lieu of current 6th class rate. Reason: Comparable with rates to other points.

40488. **Fluorspar**, in packages or in bulk, C. L., ex-river, minimum weight 40,000 lb., from points in Pittsburgh District, viz.: Allegheny (Pittsburgh North Side), Aliquippa, Bessemer, Colona, Etna, Glassport, Glenwood, Hays, Junction Transfer (33rd St. Station Pittsburgh), McKeesport, Munhall (Kenny Yard), New Kensington, Pittsburgh, Rankin, Rochester, South Duquesne, Munhall, Mifflin Junction, Pa., to Easton, Pa., $4.40 per net ton. Reason: See Note 5.

40488, Sup. 1. To amend Rate Proposal No. 40488, covering rate of $4.40 per net ton on **fluorspar**, in packages or in bulk, C. L., ex-river, min. wt. 40,000 lb., from points in Pittsburgh district to Easton, Penn., by addition of Easton (13th St.), Penn., as a destination, subject to same rate.

40503. **Gypsum rock**, crude or run of mine, C. L. (See Note 2), but not less than 80,000 lb., from Saltville and Plasterco, Va., to Copley, O., $3.63 per net ton in lieu of current 6th class rate of $7 per net ton. Reason: See Note 5.

40526 (shippers). **Limestone**, ground or pulverized and/or **stone dust**, C. L., min. wt. 60,000 lb., from Kerns, Va., to points in West Virginia on N. Y. C. R. R. and B. & O. R. R., rates shown in Exhibit "A," copy of which will be furnished upon request. Reason: See Note 5.

M-4416 (shippers). To establish rates on **slag, coated with asphalt**, C. L. (See Note 3), from Buffalo, N. Y., to points within a radius of 150 miles, on the following basis:

(1) To destinations on and west of a line drawn from Rochester, N. Y., through Wayland, N. Y., Canisteo, N. Y., Ceres, N. Y., Larabee, Penn., on and west of a line of the P. R. R. through Port Allegany, Penn., Emporium, Penn., Driftwood, Penn., to DuBois, Penn., rates on basis generally recognized as proper from origins in Western New York state, viz.: I. C. C. Docket 25028 scale for the short line distance (figured over not more than three carriers).

(2) To destinations east of that line drawn from Rochester, N. Y., through Wayland, N. Y., Canisteo, N. Y., Ceres, N. Y., Larabee, Penn., on and east of a line of the P. R. R. through Port Allegany, Penn., Emporium, Penn., Driftwood, Penn., to DuBois, Penn., rates on basis of the Tyrone Forge Scale against the short actual working route.

40521 (shippers). **Slate**, crushed or ground, **slate dust** and **slate flour**, in straight or mixed carloads, min. wt. 40,000 lb., from Whiteford and Cardiff, Md., Delta and Slate Hill, Pa., to Perth Amboy, N. J., 18c per 100 lb. in lieu of current class rate of 24c per 100 lb., min. wt. 50,000 lb. Reason: See Note 5.

M-4418 (shippers). **Slate, crushed slate, ground refuse** or **scrap**, C. L., min. wt. 50,000 lb., to Lennoxville, Que., from Cardiff, Whiteford, Md., Delta and Slate Hill, Penn., 30c per 100 lb., and from Bangor and Pen Argyl, Penn., 28c per 100 lb. **Granules, roofing**, made from burnt shale and crushed or ground brick, C. L., min. wt. 50,000 lb., from Watsontown, Penn., to Lennoxville, Que., 30c per 100 lb. **Stone chips** or **granules (roofing granules)**, C. L., from Advance and Gladhill, Penn., to Lennoxville, Que., 32c per 100 lb. Reason: See Note 5.

Texas-Louisiana

6146. **Sand, silica.** Shipper's proposal which has been submitted for mail consideration with expiration date of November 1, 1941, to establish rate of 205c per ton of 2000 lb. on silica sand in box cars, C. L. (See Note 2), from Espey Sand Pit to Palestine.

6149. **Classes and commodities, sand, gravel, crushed stone, etc.** Shipper's proposal to cancel Items Nos. 530 and 690 of Texas Lines' Rules Circular No. 1-F and Items Nos. 255 and 265-A of Texas Lines' Tariff No. 84-C.

6254. **Silica sand.** Shipper's proposal to establish rate of $1.79 per ton of 2000 lb. on silica sand, in box cars, C. L. (See Note 3), from Espey Sand Pit, Texas, to Waco, Tex.

New England

56544 (2R). **Slate**, crushed, dust, ground, refuse or scrap, min. wt. 50,000 lb., Fair Haven to Castleton, Vt., inclusive, Poultney to West Pawlet, Vt., Inc., to Lennoxville, Que. Present—6th class; proposed—19. Reason—Recognized basis of this traffic to Canada.

56599 (2-R). **Asphalt filler**, min. wt., 60,000 lb., Waterbury and Johnson, Vt., to Economy, Penn., $4.90 net ton, Economy, Penn., $4.79 net ton. Present—26 and 24 respectively per 100 lb. on talc tailings as per Agent Doe's I. C. C. 448 and 160 and 362. Reason: Same basis as generally applicable on this commodity from New England origins.

56686 (1-AR). To revise column B, C and D rates on **limestone**, broken or crushed, as published in N. Y. C. R. R. I. C. C. 233 from N. Y. C. R. R. (B) origins Cheshire, Farnams, North Adams, Renfrew and Zylonite, Mass., to destinations on the D. & H. R. R., N. Y. C. R. R. (E) and N. Y. C. R. R. (WS). (Exhibit showing proposed and present rates will be furnished on request.) Reason: To correct errors thereby establishing authorized basis, also to equalize rates for competing deliveries.

6279. **Limestone.** Shipper's proposal to establish rate of 72c per ton of 2,000 lb. on crushed limestone, carloads (See Note

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3), from Dittlinger, New Braunfels and Ogden to Houston, Texas, restricted to apply only on crushed limestone to be used in blast furnace at Houston.

6289. **Limestone.** Shipper's proposal to establish rate of 91c per ton of 2,000 lb. on crushed limestone, carloads (See Note 3), from Crawford to Houston, Tex.

27025 (shipper; suggested by carrier). **Limestone, agricultural, broken, crushed, ground or pulverized,** C. L. Establish 303c net ton, Mascot, Tenn., to Belle, W. Va.

27067 (shippers; suggested by carriers). **Manganese ore,** C. L., min. 100,000 lb. Establish 360c gross ton, Wingina, Va., to Kingsport, Tenn.

27074. **Ground phosphate rock,** C. L. Establish 600c gross ton, Fla. mines named in SALRy I. C. C. A-7915 and ACLRR I. C. C. B-3022 to The Plains, Va.

27088 (carrier). **Stone, crushed, and limestone sand,** C. L. Cancel, as obsolete, rate of 75c net ton from Mascot and Strawberry Plains, Tenn., to Ewing, Revillo and Sevierville, Tenn., published in Items 12980 and 12990, S. F. T. B. Tariff 388-D.

27103 (carrier). **Slag,** C. L. Cancel rates of 105c C. L., min. 100,000 lb., and 120c net ton C. L. min. as per Item 200 of S. F. T. B. Tariff 388D from Alabama City, Ala., to Atlanta, Ga. Mileage scale rate of 120c net ton to apply.

27123 (carrier). **Phosphate rock, not acidulated (acid phosphate) nor ammoniated, and limestone, phosphatic,** C. L., min. 40,000 lb. Establish 471c net ton, N. C. & St. L. Ry., Centreville, Tenn., district and Columbia, Tenn., to Columbia, Miss., and Amito, La.

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PARSONS ENGINEERING CORP.
CLEVELAND, OHIO

27126 (carriers). **Limestone or marble, granulated, ground or pulverized, in closed cars,** C. L., min. 80,000 lb. Establish to Riverton, Va., from Cartersville, Tate and Whitestone, Ga., 245c and Sparta, Tenn., 265c net ton.

27132 (shipper; suggested by carrier). Revise present rates so as not to exceed Riverton, Va., combination on **limestone, ground or pulverized,** C. L., from Cartersville, Ga., Sparta, Tenn., Tate and Whitestone, Ga., to Buffalo, N. Y., Chester, W. Va., Jeannette and Pittsburgh, Penn.

27133 (shipper; suggested by carrier). **Clay gravel,** C. L. Establish from Cantelous Spur, Ala., to Wiley and Snowdoun, Ala., 40c; Tharin, LeGrand, and Sprague, 50c; Ramer, Grady, Ada, Sellers, Strata, and Naftels, 60c; La Pine, 70c net ton.

27166 (carrier). **Ground phosphatic sand or clay,** C. L. Cancel, as obsolete, rates between Tampa, Fla., on the one hand, and Madison and Chattahoochee, Fla., on the other, publish in A. C. L. R. R. I. C. C. B-2975.

27356 (shipper; suggested by carrier). **Limestone, ground,** C. L. Establish 40c net ton, Kendrick, Fla., to Reddick, Fla., for manufacturing purposes. Truck competitive. Expires 12/31/42.

26695. **Lime,** Ada, Okla., to interstate points. To establish rates on lime, carloads, from Ada, Okla., to destinations named in S. W. L. Tariffs 227C and W. T. L. 368A based on mileage scale used in arriving at rates from other producing points in the Southwest.

27407. Establish charge of 330c per car for switching sand from Mammoth, Fla. (A. C. L. R. R.), to Lake Wales, Fla., when destined to S. A. L. Ry. local stations.

27430. **Feldspar,** crude, C. L., min. 80,000 lb. Establish 195c net ton, Martinsville, Va., to Erwin, Tenn.

27432. **Feldspar,** C. L., min. 80,000 lb. Establish 715c net ton, Bedford, Va., to Shreveport, La., to alternate with present rate of 935c net ton, min. 50,000 lb.

27437. **Sand,** C. L. Cancel, as obsolete, rate of 99c net ton from Kingstree, S. C., to Charleston, S. C., for transshipment to Pacific Coast, published on page 83, S. F. T. B. Tariff 139.

27455. **Phosphate rock,** C. L. Establish 660c gross ton from Fla. mines to Memphis, Tenn., and cancel proportional rate of 570c gross ton.

27457. **Stone,** crushed, C. L. Cancel rate of 88c to Louisville, Ky., and 45c net ton to Fisherville, Ky., from Tyrone, Ky., published in S. F. T. B. Tariff 388-E. Normal rates to apply.

27474. Revise present joint through rates on **ground or pulverized limestone or marble,** C. L., min. wt. 60,000 lb., Sparta, Tenn., and Cartersville, Ga., to eastern destinations to basis of lowest combination.

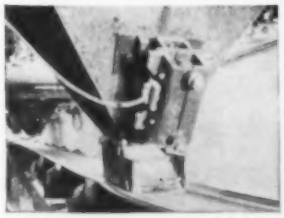
27477. **Fullers earth,** C. L. Establish from Attapulgus, Ga., Jamieson, Quincy and Superior, Fla., to Brooklyn, N. Y., Edgewater, N. J., Long Island City, N. Y., and New York, N. Y., rate of $7.70 net ton, min. wt. 70,000 lb., and $9.25 net ton, min. wt. 50,000 lb., for application via all-rail routes.

Western Trunk Line

E-41-497. **Limestone,** ground or pulverized, unburnt, C. L. min. wt. 60,000 lb., from Hannibal, Mo., Marblehead, Ill., Quincy, Ill., and White Bear, Mo., to Elwood, Ind., 259; Flint, Mich., 347; Chillicothe, O., 336; Springfield, O., 303, being proposed rates to representative points. Rates are based on I. C. C. Dkt. 25220 Carriers Revised Scale. (Copy of exhibit will be furnished on request.) (By shipper.)

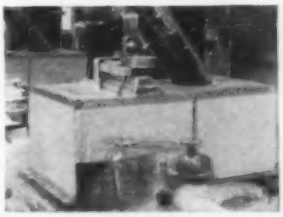
E-41-501. **Stone, crushed,** C. L., (See Note 2), from Randville, Mich., to Traverse City, Mich. Rates: Present—Combination basis. Proposed—$2.70 per net ton.

Put *"VIBRATION"* To Work
MOVING MATERIALS THE EASY WAY

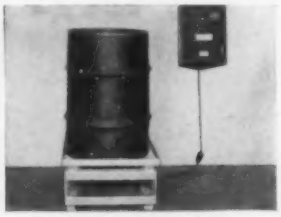


ELECTRO-MAGNET VIBRATORS
Open Up "Constipated" Bins and Chutes

VIBRATORY FEEDERS
From lbs. to tons per hour by the twist of a Rheostat.



GRAVIMETRIC FEEDERS
Weigh Feed Material to a 99% Accuracy.



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Increase the Net Contents of barrels, drums, etc.

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450 LEXINGTON AVE. HOMER CITY, PA.

PEARL HARBOR
BIRTHPLACE OF UNITY

STEAM—GASOLINE—DIESEL LOCOMOTIVES—ELECTRIC OR MECHANICAL DRIVE

STEAM—GASOLINE—DIESEL LOCOMOTIVES—ELECTRIC OR MECHANICAL DRIVE

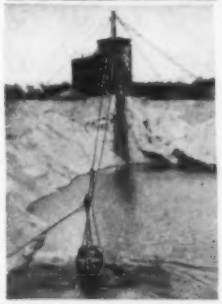
As one man the people of America have dedicated themselves to an all-out march toward Victory. Such is the miracle of Pearl Harbor. We of Davenport are completely engrossed in the task of producing power units for our Army and Navy, our Allies, American war industries, American railroads and American builders of production facilities. The traditional dependability of Davenport Locomotives, established on a world-wide scale during more than forty years, is now enlisted for the duration—and for the Victory tasks of the Peace to follow. Rely on Davenports for those VITAL JOBS.

EXPORT OFFICE **BROWN & SITES** 50 Church St., N. Y. Cable Add. "Brosites"

DAVENPORT LOCOMOTIVE WORKS
A DIVISION OF DAVENPORT BESLER CORPORATION, DAVENPORT, IOWA

SAUERMAN *Long Range* MACHINES

DIG, HAUL and DUMP *in One Operation*



(Above) Two typical Sauerman installations—a Scraper at work in a dry pit and a Cableway in a wet pit.

During more than 30 years of service all over the world, Sauerman Scrapers and Cableways have proved to thousands of users that they are the most economical machines for long range material-handling in general, and especially for pit and bank excavation, river dredging, moving overburden and stockpiling.

These machines will dig any material that a plough can penetrate. One man controls the entire operation. Power cost and maintenance are exceedingly low per cubic yard of material handled.

A Sauerman machine digs with equal facility under water, on mushy ground, on a hillside or in a rough pit. Operation is continuous-digging, hauling and dumping. Capacities run from 10 to 600 cu. yd. per hour, varying in accordance with size of bucket and length of haul.

Write for Catalog

SAUERMAN BROS., INC.
530 S. Clinton St., Chicago

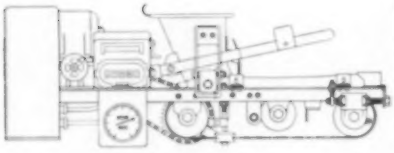
Stepping up and maintaining work schedules during these days of high pressure production in all lines, requires equipment of maximum dependability and efficiency.

Because Wisconsin Engines (1 to 35 hp.) are built for *heavy-duty service; because they are air-cooled;* because they are compact in design; extremely light in weight; equipped with weather-sealed outside magneto with impulse coupling for quick starting in any weather; because they run on Timken roller bearings . . . Wisconsin Engines AT WORK today, are increasing productive capacity wherever they are in use.

MOST POWER Per POUND

WISCONSIN MOTOR Corporation
MILWAUKEE, WISCONSIN, U. S. A.
World's Largest Builders of Heavy-Duty Air-Cooled Engines

FEED BY WEIGHT
WITH THE
CONSTANT WEIGHT
FEEDER
OR
"FEEDOMETER"



A self-contained unit attached to bin outlet.

Feeds material at a constant weight rate with 98% accuracy.

The "Feedometer" indicates the feed rate and records the total and batch weights fed in pounds, tons, bbl., or other units.

Made in 4 sizes with capacities of 1 pound to 650 tons per hour.

A user reports 20% increase in capacity of grinding unit after installing this feeder.

Bulletins 33C and 43.

HARDINGE
COMPANY, INCORPORATED
YORK, PA., Main Office & Works
NEW YORK, 122 East 42nd Street
CHICAGO, 205 W. Wacker Drive
SAN FRANCISCO, 501 Howard St.
TORONTO, 200 Bay Street

OBITUARIES

CHARLES M. MOORE, a director of the Volunteer Portland Cement Co., Knoxville, Tenn., and president of the Moore Coal Co. and Clinchmore Mining Co., passed away recently at the age of 68, after only a brief illness.

•

TILGHMAN C. HUBBERT, secretary-treasurer of T. C. Hubbert Co., Inc., quarry operators, Wilmington, Del., died recently at the age of 58. Mr. Hubbert was born in Williamsburg, Md., and received his early education in the Cambridge schools and later attended Goldey College. He began his business career in Wilmington in 1903. He was employed successively by Stewart and Donohue, D. L. Taylor, and the Arundel Corp. He became an executive of the Hubbert concern after it took over the Arundel Corp. business.

•

WILLIAM BLAKE, a pioneer in the slate industry, died recently at the age of 90. Born in Devonshire, England, Mr. Blake came to America at the age of 18. He first settled in Pen Argyl, Penn., where he started in the slate business and worked diligently until he became a slate operator of wide renown. He operated many quarries in Bangor and Pen Argyl, and was president of the Columbia Bangor Slate Co. and the Bangor Vein Co.

•

EARL GOODWIN SOUDERS, SR., an executive of the General Crushed Stone Co., Easton, Penn., died recently at the age of 63. Mr. Souders had been superintendent of the John T. Dyer Quarry Co., Birdsboro, Penn., for many years.

•

DAVID S. UNRUH, Covina, Calif., known as a pioneer in the lime industry in the United States, passed away recently at the age of 68. A civil engineer, Mr. Unruh attended the Boston Institute of Technology and along with Herbert Hoover was a member of the first graduating class from Stanford University, Palo Alto, Calif.

•

CLARE S. MCARDLE, vice-president and general manager of the Missouri Portland Cement Co., St. Louis, Mo., died recently at the age of 49.

•

LEWIS ALBERT BASSETT, president of Hendrick Mfg. Co., Carbondale, Penn., died recently at the age of 64. Mr. Bassett went to work as a general utility man with the Hendrick Mfg. Co. in 1878. In this growing business which he helped develop, he served in various positions until he was made secretary and treasurer of the limited corporation. In 1901, upon the full incorporation of the business, he became vice-president, and in 1909, succeeded the founder, E. E. Hendrick, as president. In addition, he was president and director of the Clover Leaf Mfg. Co., Honesdale, Penn., and a director of the Lehigh Metals Co., Scranton, Penn. Mr. Bassett was well known throughout the industry.

•

A. M. LANPHEAR, associated with the Stewart Sand and Material Co., Kansas City, Mo., until his retirement six years ago, died recently at the age of 81.

•

JOSEPH J. STAFFORD, one of the founders of the Ideal Cement Co., Denver, Colo., passed away recently at the age of 61. After leaving the Ideal Cement Co., Mr. Stafford was accountant for the Van Dorn Iron Works for 15 years, and at the time of his death worked for the Schofield Building Co.

•

CAPTAIN LOGAN A. NOLL, retired riverman of Marietta, Ohio, died recently at the age of 79. In 1904, Captain Noll incorporated the Ohio River Sand and Gravel Co. which was the first local operation in river sand and gravel. He continued with this company a number of years, during which time he invented and patented improvements that are now in use in the dredging of sand and gravel, and a special invention was a screen. He later built and operated the sand and gravel plant which is owned by the Marietta Concrete Corp. in Westview, Ohio. Until the time of his retirement in 1935, he operated the Kennedy Sand Co. on the Allegheny river.

•

DONALD E. DICKEY, research engineer, Broderick and Bascom Rope Co., St. Louis, Mo., passed away recently in Los Angeles, Calif.

•

WILLIAM GUY WOLFORD, owner and manager of the Ready-Mixed Concrete Co., Indianapolis, Ind., died recently at the age of 46.

•

WALTER C. AVERILL, auditor for the Atlas-Portland Cement Co. and its successor company, the Universal Atlas Cement Co., Chicago, Ill., until his retirement in 1938, passed away recently in Hannibal, Mo.

GENERAL

GIVES YOU MORE!

Let us explain how and why—
when you next need a Shovel,
Dragline, Crane or Clamshell.

The GENERAL EXCAVATOR CO.
MARION, OHIO

LOW-COST ACCURATE SCREENING

• Screening equipment is of first importance to National Pulverizing Co., Millville, N. J., whose product—silica sand—is accurately graded to seven sizes. Starting 15 years ago with 8 Link-Belt vibrating screens, they have since purchased 7 additional units. As in numerous other installations, Link-Belt vibrating screens have shown the way to accurate separation and lowest operating cost. The whole story of their economy and smooth, trouble-free operation is given in Book No. 1762. Send for a copy today.

LINK-BELT COMPANY 8634
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FOR

VIBRATING — SHAKING — REVOLVING EQUIPMENT

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CROSS ENGINEERING COMPANY
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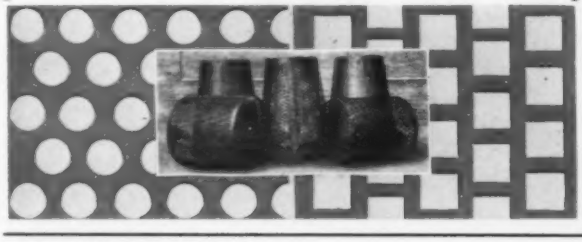
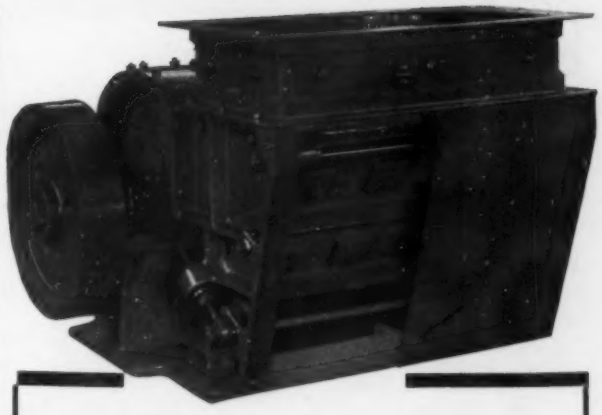
Our Sales Agencies in all principal cities, and our efficient manufacturing facilities ARE AT YOUR SERVICE.





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INVESTIGATE AMERICAN TODAY

Events happen fast in war times and plants that are prepared will be assured plenty of orders. Equip your plant now with an American Crusher for trouble-free service. You can depend on this sturdy crusher—Heavy Cast Construction, Cast Steel Adjustable Platen, Cast Steel Discs, Heavy Alloy Steel Shaft, SKF Spherical Roller Bearings and Manganese Lined Crushing Chamber.

Write today for complete details.

AMERICAN PULVERIZER CO.
1245 MACKLIND AVE. ST. LOUIS, MO.

Federal Contract Awards

AWARDS made by Federal governmental agencies to rock products companies as reported by the Division of Public Contracts, Department of Labor, are as follows:

Crushed Stone

Walter B. Roselip, San Luis Obispo, Calif., WPA, $55,480
The General Crushed Stone Co., Watertown, N. Y., WPA, $13,382
Thorn-Wilmerding Corp., Linden, N. J., WPA, $21,432
The General Crushed Stone Co., Winchester, Mass., WPA, $16,094
Williston Shell Rock Co., Ocala, Fla., WPA, $38,220

Slag

The Buffalo Slag Co., Inc., Erie, Penn., WPA, $13,702

Cement

*Various Sources
Lehigh Portland Cement Co., Ormrod, Chapman, and Sandt's Eddy, Pa., and Alsen, N. Y., War, $19,556
Lehigh Portland Cement Co., Ormrod, Chapman, and Sandt's Eddy, Penn., and Alsen, N. Y., War, $55,980
*Shultz Building Material Co., Hoboken, N. J., WPA, $11,200
Lawrence Portland Cement Co., Rockland, Me., War, $52,870
Universal Atlas Cement Co., Hudson, N. Y., War, $52,870
Southwestern Portland Cement Co., El Paso, Texas, Int. Recl., $20,625
Whitehall Cement Mfg. Co., Cementon, Penn., WPA, $65,610
Keystone Portland Cement Co., Inc., Philadelphia, Penn., WPA, $14,150
*W. H. Allen Co., Wichita, Kansas, WPA, $17,664

Concrete Pipe

Keasbey & Mattison Co., St. Louis, Mo., War, $11,166
Sherman Concrete Pipe Co., Tampa, Fla., WPA, $20,674
Thomas Concrete Pipe Co., Beaumont, Texas, WPA, $60,866

TOUGH and STRONG
THAT'S THE NEW UNIVERSAL

Put them to work on the toughest screening job you have in your Plant. We guarantee that you will be satisfied.

Economy of performance unequalled. A further surprise awai's you when you find how reasonably priced they are. Write us TODAY!

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Equip your vibrating and shaking screens with Hendrick Perforated Plate and you can eliminate clogging troubles — the full clearance insures better, finer screening.

Hendrick Perforated Plate for vibrating and shaking screens is available in practically any size or shape of opening and in a variety of metals, particularly Hendrick High Carbon, Heat Treated Steel.

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Makers of Elevator Buckets of all types, Mitco Open Steel Floorings, Mitco Shur-Site Treads and Mitco Armorgrids. Light and Heavy Steel Plate Construction.

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centrifugal SAND PUMPS

for Slurries, Sand Tailings, Slimes, Acid Sludges

Save Pumping Cost

Continuous operation without attention for long periods. Stuffing box, stuffing, gland water ALL eliminated. Close clearances maintained by easy slippage seal adjustment. Heavy pumping parts of material best suited for YOUR particular problem. Complete engineering service. Prompt shipment of parts. The most efficient and economical pump you can buy. *Write for Complete Catalog*

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United States Concrete Pipe Co., Cleveland, Ohio, War, $64,315

Ready Mixed Concrete

Road Material Corp., Greenridge, S. I., N. Y., WPA, $19,680
Roquemore Gravel & Slag Co., Montgomery, Ala., WPA, $27,025

Sand and Gravel

†Estimated

†Union Sand & Gravel Co., Spokane, Wash., War, $19,400
Quincy Sand & Gravel Co., Braintree, Mass., WPA, $10,500
†Birmingham Slag Co., Calhoun, Tenn., TVA, $16,000
Southeastern Sand & Gravel Co., Inc., Tallahassee, Ala., War, $56,000

Bituminous Mixtures

The Highway Corp., Newark, N. J., WPA, $20,608
O. F. Winslow & Co., Hooksett, N. H., WPA, $24,000
Salina Construction & Supply Co., Inc., Syracuse, N. Y., WPA, $20,040
Halton Amiesite Co., Inc., Flushing, N. Y., WPA, $11,373
Angelo Tomasso, Inc., New Britain, Conn., WPA, $37.728
Five C. Refining Co., Los Angeles, Calif., $195,845

Agricultural Limestone

Indefinite Amounts
(Agri P S & T and AAA)
*Various Sources
†Estimated

Tom Fitch, Bend, Oregon
Lee Lime Corp., West Stockbridge, Mass.
*†The Indian Hill Stone Co., Chicago, Ill.
Jesse Allen Lime Co., Burns, Tenn.
Bertha Mineral Div., New Jersey Zinc Co., Austinville, Va., from Yadkin Valley Lime Co., Yadkinville, N. C.
Catawba Limestone Corp., Newton, N. C.
Maymead Lime Co., Shouns, Tenn.
New Castle Lime & Stone Co., Hillsville, Penn.
Patterson Limestone Prod. Co., Inc., Patterson, N. Y.
Bellefonte Stone Prod. Corp., Naginey, Penn.
Grove City Limestone Co., Osborne, Penn.
Whiterock Quarries, Pleasant Gap, Penn.
Bethlehem Steel Co., Bridgeport, Penn., from Joseph Mills, New York, N. Y.
Thomasville Stone & Lime Co., Thomasville, Penn.
Uvalde Rock Asphalt Co., Blewett, Texas, WPA, $16,459
Wm. F. Bowe, Jr., Spartanburg, S. C., WPA, $92,640
The Barrett Co., Bound Brook, N. J., WPA, $38,960
Southern Bitumen Co., Ensley, Ala., WPA, $12,075

COMING CONVENTIONS

American Concrete Institute, Palmer House, Chicago, Ill., February 17 to 20, 1942.

American Concrete Pipe Association, Palmer House, Chicago, Ill., February 21 and 22, 1942.

National Lime Association, The Homestead, Hot Springs, Va., May 26 to 28, 1942.

PULVERIZERS for the reduction of Cement Materials, Limestone, **Agricultural Limestone,** Fire Clay and All Dry, Refractory Materials.

Capacities: 1 to 60 tons per hour — Finenesses: 20 to 350 mesh

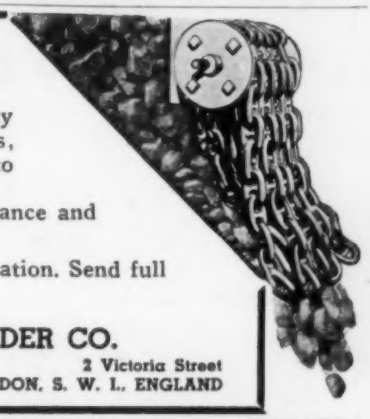
BRADLEY PULVERIZER CO.

ALLENTOWN, PENNA.

To Increase Capacities or Fineness of Present Grinding Plant—
To Reduce Power and Maintenance Costs—
To Insure an Absolutely Uniform Product—

***Use the* BRADLEY AIR SEPARATOR**

THE ROSS FEEDER



Completely controls the flow of any size material from Storage Bins, Hoppers or Open-Dump Chutes to Crushers, Conveyors, Screens, etc.
High in efficiency. Low in maintenance and power consumption.

Furnished in sizes to suit your operation. Send full particulars for recommendation.

ROSS SCREEN & FEEDER CO.

19 Rector Street, NEW YORK, U. S. A. — 2 Victoria Street, LONDON, S. W. 1., ENGLAND

MANGANESE STEEL CASTINGS

for PULVERIZERS, CRUSHERS, ROLLS, SCREENS

for SHOVELS, DREDGES, CRANES, CONVEYORS

The Frog, Switch & Mfg. Co.

Established 1881 — CARLISLE, PA.

Make Your Screening Surfaces More Effective with

HARRINGTON & KING
PERFORATED METAL SCREENS

Their perforations are properly spaced to give greatest capacity without loss of strength and durability. Any size, any shape, any metal, any perforation.

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NATIONAL DEFENSE
Weld with
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Trade Mark Registered U. S. Patent Office
MANGANESE NICKEL STEEL
U. S. PATENTS 1,876,738—1,947,167—2,021,945
WELDING ELECTRODES
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•
SOLD ONLY THROUGH DISTRIBUTORS
Stulz-Sickles Co.
NEWARK, NEW JERSEY

New Incorporations

Clinton Sand & Gravel Co., Clinton, Iowa, a corporation organized under the law of the State of Iowa, has been dissolved in accordance with the provisions of its Articles of Incorporation.

The Norwood Lime Co., Science Hill, Ky., has been granted a charter with a capital of $300. Incorporators are E. M. Montgomery, Charles Hardwick, and B. C. Cabbell.

Shelton Concrete Products Co., Shelton, Wash., has filed incorporation papers. Agents are Montgomery & Montgomery, Seattle, Wash.

Lewis County Concrete Products Co., Centralia, Wash., has been organized. Agents are Montgomery & Montgomery, Seattle, Wash.

Pioneer Lime Co., Houston, Texas, has been incorporated as a manufacturing and mining concern. Capital stock $25,000. Incorporators are Tom H. Elliott, M. M. Williams, and Jim S. Phelps.

Boonville Sand Corp., Utica, N. Y., has been granted a charter to deal in realty and building materials. Capital stock 200 shares, no par value. Hughes & Dorrance, Utica, N. Y., are the agents.

The Hopkins Concrete Pipe Co., Inc., Mercedes, Texas, has been incorporated with a capital of $1000. Incorporators are J. R. Hopkins, R. P. Hopkins, and L. C. Rushton.

Dark Barre Granite Corp., Barre, Vt., has been organized with a capital of 200 shares of common stock, par value $100 a share. Of this amount 50 shares were issued for cash and 150 shares for services, tools, equipment and supplies. Incorporators are Abraham Beck, president; Joseph Poulin, Jr., and Norman J. Pratt, clerk.

Newman Service Burial Vault Co., Cuero, Texas, has been incorporated with a capital of $4000. Incorporators are J. T. Newman, D. C. Wooderson, and E. H. Nielsen, Jr.

National Concrete of Texas, Inc., Dallas, Texas, has been incorporated with a capital stock of 100 shares, common, no par value. Incorporators are Wiley Johnson, Iverson J. Walker, and Paul Carrington.

All Boroughs Sand & Gravel Corp., Manhattan, N. Y., has been granted a construction charter with a capital of 100 shares, no par value. Samuel Sculnick, New York, N. Y., is the agent.

Manufacturers' News

The B. F. Goodrich Co., Akron, Ohio, has announced that the former mechanical goods and sundries sales divisions have been combined and given the new name of Industrial Products Sales Division, with B. F. Stauffer as division assistant general manager in charge of Miller plant activities; L. H. Chenoweth, manager of manufacturers' sales; C. F. Conner, manager of distributor sales; C. O. Delong, manager of operations, and the following department managers: P. W. Van Orden, hose and belting; J. F. Johnston, molded, extruded, sponge, Anode dipped goods; G. K. Ryan, rubber and latex thread, golf ball products; H. C. Klein, rubber lined and covered equipment; F. A. Lang, shoe products sales; J. M. Failey, printing rubber, rolls, blankets, platens, packings, floor covering, lathe cut goods; and H. A. Bauman, bands, drug, hospital and surgical products.

The McCarty Co., Los Angeles, Calif., has announced that R. Calbert Haws, for the past year an account executive of their company, has joined Western Precipitation Corp., to assist Richard F. O'Mara, sales manager, in advertising and sales promotion. Mr. Haws was formerly with Henri Hurst and McDonald, and head of his own agency in Chicago.

The Marmon-Herrington Co., Inc., Indianapolis, Ind., advises that A. W. Herrington, head of the company, has been elected president of the Society of Automotive Engineers. Mr. Herrington is also chairman of the board of directors of the Merz Engineering Co., a Marmon-Herrington subsidiary.

The Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc., Passaic, N. J., has announced the following appointments: W. L. White, director of laboratories, and H. Snyder, manager of the roll covering and tank lining departments, are now assistant factory managers. H. H. Burrows has been appointed manager of the roll covering and tank lining departments, and P. A. Cady will be laboratory manager.

The Master Builders Co., Cleveland, Ohio, has made the following appointments to its field staff handling cement dispersion and pozzolith on defense construction: A. B. Ruf to San Francisco, Calif.; Sam McMurray to Arkansas, Mississippi and western Tennessee projects; C. H. Borcherding to Baltimore and eastern Maryland territory; L. W. Johnson and P. G. Davis to headquarters service staff.

General Electric Co., Schenectady, N. Y., has appointed W. A. Wirene as assistant sales manager of the Petroleum, Chemical, Mining, and Steel Mill section of the company. Mr. Wirene was born in Columbia, Iowa, and graduated from Iowa State College in 1925 with a Bachelor of Science degree in electrical engineering. He joined General Electric Co. as a student engineer in 1925 and a year later entered the sales training course, and was later transferred to the Industrial Department. At the time of his promotion he was sales engineer of the Petroleum and Chemical section.

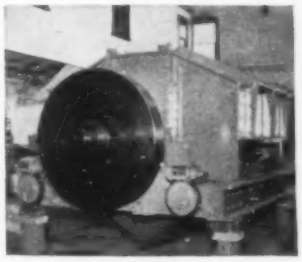
TRI-VIBE GIVES TRIPLE EFFECTIVENESS
WITH ONLY ½ H.P.

Greater Capacity and Uniformity
Greater Fine Screening Efficiency
Greater Operating Economy
Tri-Vibe triple powers the free swinging jacket . . . gives better distribution of vibratory action and prevents blinding.
The Leahy Heavy Duty Vibrating Screen
Write for Bulletin No. 14-H.

THE DEISTER CONCENTRATOR COMPANY
The Original Deister Co. Est. 1906
915 GLASGOW AVE. FORT WAYNE, IND.

ANOTHER "PENNSYLVANIA" REVERSIBLE HAMMERMILL

ready to "go on the line" in a new Cement plant designed for top efficiency in every Department.



- Major crushing by smashing impact
- Automatic hammer turning
- Product sizing control, and wear compensation, assured by Duplex cage adjustments
- Reduced power demand
- Sharply cut maintenance cost

are some of the outstanding advantages which this REVERSIBLE Hammermill will provide in the Secondary Preparation for modern Raw Side Grinding Mills.

Send for Bulletin No. 1030, and PUT YOUR REDUCTION PROBLEMS UP TO US.

PENNSYLVANIA CRUSHER COMPANY

Liberty Trust Bldg.
PHILADELPHIA, PA.

RYERSON CERTIFIED STEELS

10 Strategically-Located Steel-Service Plants

Principal products include—Alloy Steels, Tool Steels, Stainless Steel, Hot Rolled Bars, Hoops and Bands, Beams and Heavy Structurals, Channels, Angles, Tees and Zees, Plates, Sheets, Cold Finished Shafting and Screw Stock, Strip Steel, Flat Wire, Boiler Tubes, Mechanical Tubing, Rivets, Bolts, etc. Write for Stock List. Joseph T. Ryerson & Son, Inc. Plants at Chicago, Milwaukee, St. Louis, Cincinnati, Detroit, Cleveland, Buffalo, Boston, Philadelphia, Jersey City.

McLANAHAN EQUIPMENT

CRUSHERS

Single and double roll and jaw crushers, hammer mills, super dry pans—steel log washers and scrubbers, sand drags, revolving and vibrating screens, elevators, conveyors, dryers, jigs, hoists.

SCREENS

Complete portable, semi-portable and stationary crushing, screening, and washing plants for different capacities of any materials.

McLanahan & Stone Corp. Established 1835 HOLLIDAYSBURG, PENNSYLVANIA

NAT-ALOY WIRE CLOTH

"Nat-Aloy" Lock Crimp Meshes

Assure Accurate Separations

Abrasive resistant, non-crystallizing. Immediate shipment from stock . . . all widths . . . all meshes . . . attractive prices.

Send for our detailed catalog No. 55.

NATIONAL WIRE CLOTH CO., INC.
252-270 W. FAIRFIELD AVE. — ST. PAUL, MINN.

HAYWARD BUCKETS

WON'T QUIT OR CAUSE TIME OUT

A Hayward Bucket keeps the job going ahead on scheduled time. It won't quit or cause time out.

THE HAYWARD COMPANY
202-204 Church Street
New York, N. Y.

Condor RUBBER PRODUCTS

BELTING
Conveyor, Elevator, Compensated, Transmission, Agricultural and V-Belts. Belting for every Service.

HOSE
Air, Acid, Contractors, Fire, Hydraulic, Oil and Gasoline, Steam, Sand Blast, Suction, Water, Spray and Special Hose. 81 Kinds for 81 Uses.

OTHER PRODUCTS
Chute Lining, Molded Rubber Goods, Industrial Brake Blocks and Lining, Rubber Lined Tanks, Rubber Covered Rolls—Abrasive Wheels, Bowling Balls.

***Keep Ahead with* MANHATTAN**

THE MANHATTAN RUBBER MFG. DIVISION
OF RAYBESTOS-MANHATTAN, INC.
111 Townsend St., Passaic, N. J.

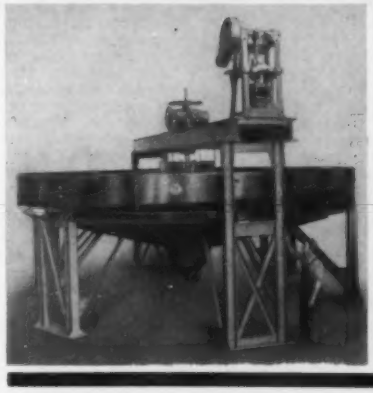
PERFORATED METAL SAND AND GRAVEL SCREENS

Manufactured exactly to your specifications

Any size or style screen, in thickness of steel wanted with any size perforation desired.

We can promptly duplicate your present screens at lowest prices

CHICAGO PERFORATING CO.
2437 West 24th Place
CHICAGO, ILLINOIS
Canal 1459



DENVER HYDRO-CLASSIFIER

The Denver Hydroclassifier is designed for fine sizing and de-sliming problems where it is essential to reduce materials to sizes minus 200 mesh to 10 microns. Enclosed integral lift vertical worm gear drive makes it easy to raise rakes. The spiral rakes convey material to center cone in shortest time. Ask us how these machines will save you money. Write for new bulletin No. C4A-B.

Denver Equipment Co.
1400 Seventeenth St.
Denver, Colorado
New York, N. Y., 50 Church St.
Salt Lake, Utah, McIntyre Bldg.
Chicago, Ill., 1085, 69 W. Wash.
Toronto, Ont., 45 Richmond St.
Mexico, D. F., Edificio Jalisco

LOWEST COST PER YARD

writes the specification of a HAISS LOADER for the man who plans for the future as well as the present.

•

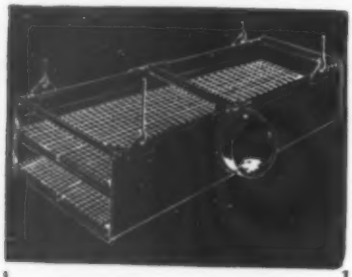
2-3-5 and 8 YARD CAPACITIES. Write for catalogs

HAISS QUALITY EQUIPMENT FOR 50 YEARS 1892 1942

GEO. HAISS MFG. CO., INC.

HAISS

Park Avenue & 143rd Street, New York, N. Y.



GYROSET

VIBRATING SCREEN

5 DISTINCTIVE FEATURES . . .

1. Full Floating Shaft.
2. Eight Positive Stroke Adjustments (quickly changed).
3. Oil Lubricated.
4. Sturdy Construction.
5. Screen Cloth Easily Changed.

★

LOW COST—EFFICIENT—ECONOMICAL

Write for Bulletin No. 939

Productive Equipment Corp.

2226-28 West Lake St., Chicago, Ill.

Manufacturers' Notes

John A. Roebling's Sons Co., Trenton, N. J., has announced the appointment of Bert M. Brock as manager of industrial relations. For the past year Mr. Brock has been director of industrial relations, Pittsburgh district, Carnegie-Illinois Steel Corp., and prior to that was assistant director of industrial relations for the U. S. Steel Corp. of Delaware, Pittsburgh, Penn. Previously, he was manager of industrial relations for the Columbia Steel Co. at San Francisco, Calif.

Bethlehem Foundry & Machine Co., Bethlehem, Penn., has been awarded the United States Navy "E" pennant and the Bureau of Ordnance flag for outstanding achievement in the production of ordnance material vital to national defense. The formal award was made by officers of the United States Navy in a simple ceremony in keeping with the gravity of the present war situation.

Worthington Pump & Machinery Corp., Harrison, N. J., has elected John M. Franklin to the board of directors of the company. Mr. Franklin is president of International Mercantile Marine Co., and of United States Lines Co. He was born in Baltimore County, Md., forty-five years ago and was educated at Middlesex, and Harvard University. During the last war Mr. Franklin was captain overseas in the American Army, serving in the tank corps. He received the Military Cross for gallantry in action. He is also a director of Pan-American Airways, Manufacturers Trust Co., American Merchant Marine Institute, Northern Insurance Co. of New York, and a trustee of Atlantic Mutual Insurance Co.

Chain Belt Co., Milwaukee, Wis., announces the appointment of Dow & Co., Inc., Buffalo, N. Y., as distributor of Rex construction equipment in the Buffalo and Rochester area.

Chicago Pneumatic Tool Co., New York, N. Y., has promoted Joseph A. Sullivan, assistant publicity manager, to advertising manager, with headquarters in New York.

Carrier Corporation, Syracuse, N. Y., announces the election of Walter A. Bowe, advertising and public relations manager, as director-at-large of the National Industrial Advertisers Association, Inc., to fill the unexpired term of R. D. Hawkins who has resigned.

Raybestos-Manhattan, Inc., Passaic, N. J., has appointed F. L. Curtis, treasurer and general manager of The Manhattan Rubber Mfg. Division, as vice-president of the company, with which he has been associated since its beginning in 1893. H. E. Smith, assistant general manager of the Manhattan Division, was appointed to succeed Mr. Curtis as general manager. J. H. Matthews, assistant factory manager, is now assistant general manager. Both Mr. Smith and Mr. Matthews have been with The Manhattan Division for many years.

Worthington Pump & Machinery Corp., Harrison, N. J., has promoted George P. Passmore to works manager in charge of manufacturing of its Wellsville works. Until recently, Mr. Passmore had been manager of manufacturing of the South Philadelphia works of the Westinghouse Electric & Manufacturing Co., having been connected with the Westinghouse organization for twenty years in various responsible capacities. The Westinghouse Award of Merit for outstanding work in the manufacturing field was awarded to Mr. Passmore in May, 1941.

The Babcock & Wilcox Tube Co., New York, N. Y., has announced that James S. Anderson is now connected with the New York District Sales Office of the company.

Sauerman Bros., Inc., Chicago, Ill., celebrated a move to new quarters with an Open House. The offices are now on the eighth floor at 522 So. Clinton street.

"Established in 1885"

STATIONARY OR MOBILE

ROCK CRUSHERS

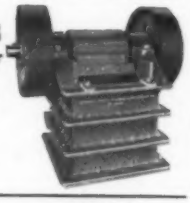
For Military Hgihway, Access Roads and Army & Navy Air Base construction

FREE—Write for Catalog No. 601

JAW CRUSHERS

Bronze or Roller Bearing

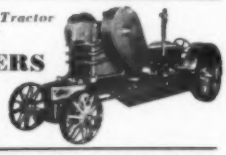
Heavy armor plate steel or cast steel.
Heavy Duty Construction
Large capacity
Small power Requirements



Self Traveling Tractor

JAW CRUSHERS

Ideal for maintenance of Military Access road work



LIMESTONE PULVERIZERS

Stationary or Portable

Crushes Large Stone to 2" minus Down to Agricultural Dust

Adjustable (8 Sizes)

Cross Section View of Pulverizer

GRUENDLER

CRUSHERS · PULVERIZERS · GRINDERS

GRUENDLER CRUSHER & PULVERIZER CO.

2920-28 N Market St., St. Louis, Mo.

FARREL BACON

CRUSHERS

Complete plants designed and equipped, including Screens, Elevators and Conveyors. Machinery for Mines and Rock Quarries, Sand and Gravel Plants.

Engineering Service

EARLE C. BACON, Inc.

17 John St., New York, N. Y.

★

You have to look to ROCK PRODUCTS for Leadership in the Industry

★

WEBBER EQUIPMENT CO.

NEW AND REBUILT MACHINERY

17 East 45th Street

New York, N. Y.

MACHINE TOOLS, MOTORS, ETC.

Quarry & Mining Machinery

KILNS

COOLERS

DRYERS

We own and offer for IMMEDIATE DELIVERY, subject to prior sale:

9—UNUSED 5′ x 50′ Worthington (Allis-Chalmers) Coolers or Dryers complete with driving mechanism.

ALSO the following unused equipment for three 8′ kilns:

Ring Gears, Gear Trains and Bases, Tires and Firing Hoods, but no supporting rollers and bases. We also have available USED supporting rollers and bases that we can rebuild.

We can make three 8′ diameter kilns up to 150′ long from the above, your specifications. Delivery with priority approximately four months.

Will sell all or part!

Classified Advertisements

POSITIONS WANTED — POSITIONS VACANT Set in six-point type. Minimum $1.00 each insertion, payable in advance.

INFORMATION—Box numbers in care of our office. An advertising inch is measured vertically in one column. Three columns, 30 inches to the page.

CLASSIFIED—Displayed or undisplayed. Rate per column inch, $5.00. Unless on contract basis, advertisements must be paid for in advance of insertion.

CONSOLIDATED CAN HELP YOU OVERCOME TODAY'S CONDITIONS

GYRATORY CRUSHERS

1—16″ Telsmith.
1—18″ Traylor Bulldog type.
1—20″ Superior McCully.
1—27″ Gates, with 100 H.P. A.C. motor.
1—No. 410-TZ Traylor, 10″ feed, can be set to ½″.
1—2′ Symons Cone Crusher, fine bowl.
3—Kennedy No. 19, No. 25, No. 49.
2—Telsmith No. 2-H and No. 3-F.
1—No. 40 Telsmith, 5″ feed, ⅝″ discharge; also No. 40 with 40 H.P. A.C. motor.

JAW CRUSHERS

48″x42″ NERMCO; 24″x36″ Allis-Chalmers; 9″x36″ Wheeling; 15″x36″ Universal; 18″x24″ Blake, 18″x24″ Pioneer; 10″x36″ Farrel, and smaller sizes.

VIBRATING SCREENS

1—4′x14′ SYMONS, DOUBLE DECK.
2—4′x7′ Leahy, 2 deck, motor driven.
4—3′x5′ Tyler Hummer, 2 deck. No. 31, enclosed.
2—4′x7′ Jeffrey-Traylor, Type FB-4, 2 deck.
1—3′x7′ Simplicity, 2 deck, motor driven.
1—3′x8′, 3′x10′ Niagara, 3 deck.
1—4′x8′ Huron, 1 deck, V-belt drive.

2—6′ x 12′ ROD MILLS

Hardinge straight side Rod Mills, iron lined, Falk herringbone steel gears, Falk enclosed gear drive units, charge of rods with each mill. Arranged for peripheral or trunnion discharge. In excellent condition and for immediate shipment.

COAL PULVERIZERS

2—Erie City "Unitype" Size A, also Size C, with 60 H.P. motor.
4—4′x8′ Kennedy; also 3′x6′.
3—Foster Wheeler Size J, with 150 H.P. motors.
2—Riley "Arrow" Size G.
2—No. 55 Raymond "Imp" with 60 H.P. motors.

RAYMOND PULVERIZERS

2—4 roll HIGH SIDE, COMPLETE. Located Toledo. Must be removed by Nov. 10th. Priced accordingly.
2—2 roll HIGH SIDE, COMPLETE. Located Mobile, Ala.
Nos. 6000, 00, 1 and 3, beater type. Also Nos. 55, 60, 90 "Imp" type.

ROTARY KILNS

5′x24′, 7′x40′, 6′x60′, 7′6″x125′.

ROTARY DRYERS, Direct Heat

Ruggles-Coles, double shell: 5′x26′, 5′x30′, 6′x35′, 5′6″x60′, 80″x45′.
Single Shell: 5′x30′, 6x40, 6x50, 6x60, 7x60.

LIME HYDRATORS

Weber Sr. type, made by Arnold & Weigel with No. 1 Raymond Bros. Lime Separator; also Kritzer.
One Complete Hydrated Lime Plant.

BALL, ROD AND TUBE MILLS

Ball Mills, 6x6, 6x8.
Rod Mills: 4′x8′, 6x12 Hardinge, straight side.
Tube Mills, 2—5x20′ Bonnot Co., silex lined.
1—5x22′ Bonnot Co., silex lined.
6′x28′, 2—6′6x20′ Smidth, silex lined.
5′x32′ Allis-Chalmers, 5′x35′ Vulcan, both iron lined.

HARDINGE CONICAL MILLS

Silex lined: 4′6x16″, 5′x22″, 6′x22″, 6′x48″, 8′x18″, 8′x30″.
Iron lined: 3′x24″, with classifier; 4′6x16″, 5′x22″, 6′x22″, 8′x18″, 8′x30″, 8′x36″ with motor; 8′x48″ with air classifier; 8′x48″.

CONSOLIDATED PRODUCTS CO., INC.

15-16-17 PARK ROW *Our Shops and Yard at Newark, N. J., cover eight acres.* **NEW YORK, N. Y.**

HYDRATORS

3 Kritzer & Schultless Hydrators.

AIR COMPRESSORS

BELTED: 355, 528, 676, 1000, 1300 & 1570 Ft.
ELECTRIC: 478, 676, 807, 1202, 1722 & 2200 Ft.
DIESEL: 603, 807 & 1000 Ft.
PORTABLE GAS: 110, 160, 220, 310, 540 & 1300 Ft.
STEAM: 49, 310, 528, 1300, 2200 & 3600 Ft.

CLAMSHELL BUCKETS, SKIPS & GRAPPLES

Owen R. A. & H. Stone Grapples.
2 Yd. OWEN Type S Material Handling.
1½ Yd., 1 Yd. & ¾ Yd. HAYWARD Class E.
18 Steel Skips 6½ x 6 x 2½.
5 Ton Bucyrus Rock Grabs.

CRANES AND DRAGLINES

¾ Yd. 5 Ton O & S 30 Ft. Boom.
12 Ton NORTHWEST 50 Ft. Boom Gas.
20 Ton LIMA, 750 Diesel, 65 Ft. Boom.
25 Ton BROWNING & 30 Ton AMERICAN Loco.
25 Ton LINK BELT K-48 Electric, 70 Ft. Boom.

CATERPILLAR SHOVELS

¾ Yd. Lima Diesel.
2 Yd. Marion Steam Shovel.
¾ Yd., 1¼ Yd., 2 Yd. & 4 Yd. MARION Electrics.
1 Yd. NORTHWEST Gas.
1½ Yd. LIMA Diesel.
1¼ Yd. BUCYRUS 41B Steamer.
4 Yd. Bucyrus 120B Electric. Also 3 yd. Erie Elec.

DUMP CARS

46—KOPPEL 1½ Yd. 24 & 30 In. Ga., V Shaped.
15—2 Yd., 3 Yd., 4 Yd., 6 Yd., 12 Yd., 36 In. Ga.
20—Std. Ga. 12 Yd., 16 Yd., 30 Yd. & 30 Yd. Cap.
15—Std. Ga. 50 Ton Battleship Gondolas.

FLAT CARS

9—50 ton std. ga. heavy duty flat cars.

HOISTING ENGINES

Gas: 15, 20, 60, 100 & 120 HP.
Electric: 30, 52, 80, 100 & 150 HP.
Steam: 6¼x8, 7x10, 8¼x10, 10x12, 12x14.

DIESEL UNITS

75, 90, 180, 200 HP F. M. Engines.
110 HP Ingersoll Rand Engine.
175 KVA Worthington 3/60/2300.
275 KVA Fairbanks 3/60/2300.

BALL, ROD AND TUBE MILLS

6x8 Pebble Mill & 5x5 Batch Mill.
5'x22" HARDINGE CON. Dry Ball Mill.
6'x22" HARDINGE CONICAL Pebble Mill.
8'x22" HARDINGE CONICAL Ball or Pebble Mill.
4x8, 8x6 & 10x9 Straight Ball Mills.
4x18, 5x18 & 5x22 Tube Mills & 6'x22'.
3½ x 8 & 5x7 Air Swept Tube Mills.
2x4½, 6x12 & 5x12 ROD MILLS.

PULVERIZERS

JEFFERY 24x20 & No. 1 Sturtevant Ring Roll.
RAYMOND Auto Pulverizer No. 0000, 0 & 3.
RAYMOND Imp. Mills, No. 4, 32 & 55.
GRUENDLER XXB Mill & Jay Bee No. 3 & 4.
RAYMOND 4 & 5 ROLL MILLS & 5 ft. Chaser M.

STEEL STORAGE TANKS

10,000 Gal., 15,000 Gal. & 20,000 Gal. Cap.

MATERIAL BIN

116 Ton Blaw Knox 2 Compt.

400 BARREL CEMENT BIN

400 Barrel Butler Portable Steel Cement Bin with Fuller automatic batcher, push button control.

SEPARATORS AND COLLECTORS

8, 10 and 14 ft. Separators, Gayco & Bradley.

ROLL CRUSHERS

36x60 Fairmount & 36x20 Diamond.

JAW CRUSHERS

10x8, 13x7½, 14x7, 15x9, 15x10, 16x9, 16x12, 16x10, 18x11, 20x8, 20x6, 20x10, 20x12, 26x12, 30x15, 30x13, 36x15, 36x20, 36x18, 36x14, 36x9, 36x6, 36x10, 36x24, 42x9, 48x42, 48x36, 60x42, 54x66, 36x16, 9x36.

CONE & GYRATORY CRUSHERS

42 in. McCully Mammoth Gyratory.
5 No. 19, 25, 37 & 49 Kennedy.
18 in., 24 in., 30 in., 36 in. and 48 in. Symons Disc.
4—10 TZ Traylor 4 ft. Gyratory.
4—Nos. 5, 3 & 6 Austin Gyratory.
2—Traylor T-12 Bulldog Gyratory, also 16 inch.
6 in. Traylor T. Gyratory.
17 Gates K—Nos. 2, 4, 5, 6, 7½, 8 & 9½.
10 Inch Austin Model 105.
6, 10 & 13 inch Superior McCullys.

SYNCHRONOUS MOTOR GENERATORS

100 K.W. RIDGWAY 3/60/2200-250-275 volt.
150 K.W. GEN. ELEC. 3/60/2200-250-275 v.
200 K.W. RIDGWAY 3/60/2200-250-275v.,900 rpm.

SLIP RING MOTORS

52 H. P. GEN. ELEC. 3/60/440 v., 1200 rpm.
(3) 100 H.P. GEN. ELEC. 3/60/440v.,900-1200 rpm.

CONVEYOR PARTS

BELT: 1000 Ft. 60 In., 700 Ft. 40 In., 600 Ft. 36 In., 900 Ft. 30 In., 1642 Ft. 24 In., 517 Ft. 20 In., 297 Ft. 18 In., 500 Ft. 16 In., 300 Ft. 14 In.
IDLERS: 54 In., 42 In., 36 In., 30 In., 24 In., 20 In., 18 In., 16 In. & 14 In.
Head & Tail—Pulleys—Takeup for all sizes
Steel Frames: 2,000 Ft. 24 In., 30 In. & 36 In. Sections.

ROTARY DRYERS AND KILNS

80 In. x 20 Ft., 8 Ft. x 20 Ft., 4 Ft. x 30 Ft., 54 In. x 30 Ft., 42 In. x 24 Ft., 5 Ft. x 30 Ft., 5 Ft. x 16 Ft., 5 Ft. x 40 Ft., 6 Ft. x 60 Ft., 6 Ft. x 20 Ft., 6 Ft. x 70 Ft., 10 x 20, 7½ x 100 & 8 x 110 Ft. Kilns.

STEEL DERRICKS

GUY: 8 Ton 85 Ft. Boom, 15 Ton 100 Ft. Boom, 20 Ton 115 Ft. Boom, 50 Ton 160 Ft. Boom.
STIFF LEG: 5 Ton 70 Ft. Boom, 15 Ton 100 Ft. Boom, 25 Ton 100 Ft. Boom, 75 Ton 135 Ft. Boom.

LOCOMOTIVES

GASOLINE: 3 Ton, 5 Ton, 8 Ton, 12, 14, and 20 Ton.
STEAM: 9 Ton, 20 Ton, 40 Ton, 60 Ton & 80 Ton.
ELECTRIC: 2 Ton, 5 Ton, 8 Ton, 40 Ton.
DIESEL: 4, 8 & 15 Ton.

SCREENS

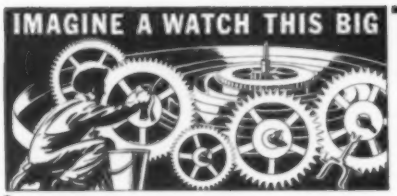
VIBRATING: 2x4, 3x6, 12x8, 3x8, 3x5, 4x5, 4x8, 4x10, 48x72 & 4x12. 1, 2 & 3 Deck.
HUMMER, ROTEX, NIAGARA & ROBINS.
REVOLVING: 3x12, 3x16, 3½x18, 3x24, 4x16, 4x20, 4x22, 4x24, 5x30, 5x20, 6x20.

TIDEWATER EQUIPMENT & MACHINERY CORP.

COMPLETE PLANTS BOUGHT AND SOLD

Lincoln Bldg., 60 East 42nd Street

New York, N. Y.



One of the best ways to visualize the thoroughness of our REBUILDING is to imagine a huge watch, because we take a machine apart piece by piece and clean and inspect each part just like a watchmaker does. All parts showing signs of wear are properly replaced.

AIR COMPRESSORS

Portable and stationary, belt with elec. or gas power, sizes from 20 cu. ft. to 1,000 cu. ft.

BINS

7—1 150-ton Blaw Knox, 1 118-ton Blaw Knox, 1 72-ton Blaw Knox, 1 51-ton Blaw Knox, 1 35-ton Blaw Knox, 2 30-ton Johnson. Above with or without weigh batchers.
All of the above are 2 comp. bins.

CABLEWAYS

1—Lidgerwood 15 ton cap. cableway, 2300' span, with Lidgerwood 12¼x15 steam hoist, with or without steel towers.

CONVEYORS

13—Portable troughing, and flat belt type with cleats, 1—12"x18'6", 1—24"x22', 3—24"x40', 1—14"x25', 1—24"x50', 1—18"x32', 1—24"x30', 1—18"x50'; National, Barber-Greene, Stephens-Adamson, Portable Machinery and Farquar.

CRANES, DRAGLINES AND SHOVELS

1—Link Belt K-55, ser. No. 1698, 70' boom, 2 yd. bucket, also have a 2 yd. shovel attachment.
1—Link Belt K-48, ser. No. 1728, 60' boom, 2 yd. bucket.
1—Northwest Model No. 5, Serial No. 3572, 50' boom with 1¼ yd. pull shovel attachment.
1—Link-Belt model K-42, ser. No. 1265, 45' boom, 1¼ yd. bucket, also 1 yd. trench hoe att. or 1¼ yd. shovel front.
2—Northwest Model 104, ser. No. 2079, No. 1386, 45' boom, 1½ yd. bucket; with 1 yd. shovel attachment.
3—Northwest Model No. 4's, Ser. No's. 3441, 3445, 3493, with 40' boom and 1 yd. pull shovel attachments.
2—Northwest model 105, ser. No. 1645, 1522, 40' boom, 1 yd. bucket.
3—Osgood Heavy Duty, ser. No. 2069, 2087 and 2403, 40' boom, 1 yd. bucket and with 1 yd. shovel attachment.
2—Erie gas-air ser. Nos. 4365 and 9758 with 45' boom and 1¼ yd. shovel attachment.
1—Osgood "Commander," ¾ yd., ser. No. 2403, 30' boom and ⅜ yd. bucket.
1—Thew ⅝ yd. gasoline shovel with ⅝ yd. shovel front and 40 ft. crane boom. Serial No. 2801.
1—Koehring Model 301, Ser. 544, 40' boom, ¾ yd. bucket.
1—P&H Model 206, Ser. No. 1901, ¾ yd., 40' boom.
1—Byers Bearcat Model No. 128, ½ yd. cap., ser. No. 4119 with 30' boom.
1—Byers Bearcat model 27, ser. No. 5289, 30' boom, ½ cl. sw., ½ yd. bucket.
1—Erie Steam Crane, ¾ yd., 40' boom.

CRUSHERS

4—Jaw Crushers: 1—12"x20" Acme; 1—10"x20" Climax; 1—9"x16" Acme; 1—2"x6" Sturtevant.
3—Gyratory Crushers: 1—No. 5 Allis-Chalmers; 1—No. 5 Austin; 1—No. 0 Allis-Chalmers.
1—Crushing Rolls: Size 42"x16" Allis-Chalmers.

LOCOMOTIVES

30—Locomotives, gas, electric and steam, 2 to 20 tons, 24", 36" and standard ga.

PUMPS (DREDGE)

2—10" Morris Dredge pumps, 1 to direct connect to motor, other belt drive.
4—Belt driven: 3 Morris Mang., 1—8", 2—6"; 1—8" Cataract.

PNEUMATIC TOOLS

36—Rock Drills, mounting, wagon, column or tripod.
53—Jackhammers, various makes and sizes.

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NEW AND USED EQUIPMENT FOR IMMEDIATE SHIPMENT

SUBJECT TO PRIOR SALE

NEW —32" Cage Mill, 3 to 4" feed rock or gravel, good for maximum 50% crushing, 40 to 60 tons per hour.
NEW —Steel Truck and Wheels, equipped with new pneumatic tires, tongue for tractor hitch, 10-ton capacity, for mounting 40 x 20" rolls or 15" x 36" crusher.
USED—9" x 16" RELIANCE Jaw Crusher, good condition.
USED—Model 101 Type K Day Limestone Pulverizer, 2 to 3 tons capacity.
USED—GRUENDLER No. 2 Monster Limestone Pulverizer, 4 to 5 tons per hour.
USED—No. 7 MITTS & Merrell Wood Hog, plain bearing, 14" x 14" hopper opening, capacity 5 tons per hour.
USED—24" x 18" LIPPMAN Portable limestone Pulverizer, with 14' elevator, in excellent condition.
USED—XXB GRUENDLER 24" x 18" welded steel Limestone Pulverizer, 6 to 7 tons per hour capacity.
USED—SCHUTTE Type F, Model L, Hammermill with or without fan for sawdust, oyster shells, etc., in excellent condition.
USED—GRUENDLER light type, 3' x 8' single deck Vibrating Screen.
USED—GRUENDLER 30" x 12" sawdust, oyster shell or fertilizer Grinder, slow speed.
USED—50-16 SUPREME (GRUENDLER) Hammermill for sawdust, oyster shells, bones or fertilizer.
One (1) Factory reconditioned LeRoi RA2P 65-HP gasoline power unit.

STATE FULLY YOUR REQUIREMENTS.

GRUENDLER CRUSHER & PULVERIZER CO.
2915-2917 North Market Street
St. Louis, Missouri

30x30, 36x16 Traylor; 54x24 A.C. dbl. roll Crushers.
2' Symons Cone, Coarse or Fine bowl, fine.
8x36, 15x36 Universal; 10x42, 11x22, 12x26, Acme Jaw crushers; 20x10, 36x10 Farrel Jaw Crushers.
19, 25B & 37 Kennedy; No. 7½, 9 & 10 McCully, 12x46 Traylor Bull Dog Gyratory Crushers.
¾-yd. Northwest Cat. Elec. Shovel, 35' boom, 440 V. A.C.
4—4 ton Koppel 36" Ga. Heavy Duty Quarry Cars. Barber Greene Loaders, 24, 25, 42 & 82A.
4x5' Hummer sgl. deck Vib. Screen & Generator.
70 ton Lima Shay std. ga. Locomotive. Rebuilt.
Shovels, Cranes, Screens, Conveyors, Elevators.
What do you need? Ask for Bulletins Nos. 55 & 56.

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3 Taper Kilns 7" x 5'-0" x 60'-0"
2 Rotary Dryers 5'-0" x 45'-0"
1 Rotary Dryer 4'-0" x 30'-0"

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3 Hardening cylinders
4 Wet Pans
2 American Clay Machinery Rotary Presses

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LOW PRICES

NEW RUBBER

GUARANTEED
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CONVEYOR and TRANSMISSION BELTING

CONVEYOR BELTING

ABRASIVE RESISTANT COVERS

Width	Ply	Top	Covers
48″	—8—	1/8″	—1/16″
42″	—5—	1/8″	—1/16″
36″	—6—	1/8″	—1/16″
30″	—6—	1/8″	—1/16″
30″	—5—	1/8″	—1/16″
24″	—5—	1/8″	—1/32″
24″	—4—	1/8″	—1/32″
20″	—5—	1/8″	—1/32″
20″	—4—	1/8″	—1/32″
18″	—4—	1/8″	—1/32″
16″	—4—	1/8″	—1/32″
14″	—4—	1/16″	—1/32″
12″	—4—	1/16″	—1/32″

TRANSMISSION BELTING

HEAVY-DUTY—FRICTION SURFACE

Width	Ply	Width	Ply	Width	Ply
18″	—6	10″	—6	6″	—5
16″	—6	10″	—5	5″	—5
14″	—6	8″	—6	4″	—5
12″	—6	8″	—5	4″	—4
12″	—5	6″	—6	3″	—4

ELEVATOR BELTING

HEAVY DUTY
RUBBER COVERED

Width	Ply	Top	Covers
12″	—6—	1/16″	—1/16″
14″	—6—	1/16″	—1/16″
16″	—6—	1/16″	—1/16″
18″	—6—	1/16″	—1/16″

ENDLESS "V" BELTS

"A"—WIDTH—All Sizes
"B"—WIDTH— " "
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1—Blaw-Knox 6′ x 12′ Brand New Ball Mill, motor driven.
6—Rotary Kilns, 7′ and 5′ x 60′, 8′ x 60′, 8′ x 110′.
9—Rotary Dryers, 2′ x 12′ to 6′ x 60′.
1—Raymond 3 roll High Side Mill.
1—Raymond 5 roll High Side Mill.
2—Louisville Dryers 6′ x 26′.
1—Williams 2XX Hammer Mill.

2—Belt Conveyors 16″ x 50′ and 56′.
6—Gould Pyramid Pumps 2″ to 4″.
1—Allis Chalmers 5′ x 22′ Compeb Mill.
2—Jeffrey Hammer Mills 24″ x 20″, 24″ x 18″.
1—Link Belt 3′ x 8′, 2 deck Vibrating Screen.
1—Tyler 3′ x 5′, 2 deck Vibrating Screen.
2—Sutton, Steele and Steele Pneumatic Tables.
1—No. 6 Deister Concentration Table.
1—Allis Chalmers 9″ x 15″ Jaw Crusher.
1—Plymouth Gas Locomotive, 6 ton, 36″ ga.
4—Williams, Gruendler Hammer Mills.

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LOCOMOTIVES SHOVELS — CRANES CARS

1—67 ton Porter 6-wheel Saddle tank, A.S.M.E. Boiler, Overhauled.
2—38 ton Vulcan 4-wheel Saddle Tanks, A.S.M.E. Boilers, Overhauled.
1—32 ton Porter 4-wheel Saddle Tank, Overhauled.

2—79 ton American 0-6-0 separate tender switchers, completely overhauled. I. C. C. condition. Built 1923.

1—17½ ton Brownhoist Locomotive Crane, Overhauled, New A.S.M.E. Boiler.

Crane or Dragline Fronts for Marion 37 and Bucyrus 50-B, One Each.

1—1½ Yd. Rehandling Clamshell Bucket, Practically New.

Birmingham Rail & Locomotive Co.
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For Sale

1—15x36 Roller Bearing Diamond Jaw Crusher.
1—8x36 Universal Jaw Crusher.
2—2 Ft. Symons Cone Crushers.
1—20x26 Diamond Roller Crusher.
1—30 H.P. Electric Motor, 220 volts.
1—65 H.P. Electric Motor, 220 volts.
1—75 H.P. Electric Motor, 2300 volts.
1—37.5 KVA AC Generator, 220 volts.
2—Ingersoll-Rand portable Air Compressor, 110 cu. ft.
1—Ingersoll-Rand Portable Air Compressor, 220 cu. ft.

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GYRATORY: 42″ Gates K. 30″ Superior McCully (Like new). 20″ Superior McCully, Gates Nos. 12, 10, 9, 8, 7½, 6, 5, 4, 3, 2, 1 (75 avail.) Telsmith Nos. 4, 5, 6, 8C, 9 & 16. Also many Austins, Kennedys and Traylors, many sizes.
JAW TYPE: Traylor 60x84, 48x60, 42x48, 24x72. Superior 84x66 & 24x36. Buchanan 36x42. Farrel 60x42, 30x36, 24x36, 18x36, 12x24. Good Roads 1030. Acme 24x40. Misc. 7x12, 9x16, 8x20, 8x24, 12x24, 9x36, 9x30, 15x36.
REDUC. TYPE: Kennedy Nos. 25, 27 & 49. Telsmith 3-F & 40. Traylor 36″ TZ, 8″, 10″, 12″. Super. McCully 6″ & 10″. Newhouse 5, 7 & 10″. Symons Cone & Disc Ty. 2′ to 4′.
ROLLS: Allis-C. 12½x12, 36x10, 40x15, 54x24 & 72x36. Fairmount 36x60 & Jeffrey 24x24 to 36x54 single roll. Cornish 36x14 & 42x16, Etc., Etc.
HAMMERMILLS: Williams No. 1, 2, 3, 4, 8 & 9. Jeffrey 36x18 & 36x42. Day Nos. 20 & 40., Etc.
MILLS: Kennedy Ball 4x5, 5x6 & 5x8. Marcy 8x6 & 10x8. Hardinge 6′x2′, 8′x30′ & 6′x9′. Misc. Tube Mills 5′ & 6′ x 22′. Sturtevant Ring Roll, Raymonds, Kents, Fuller-Lehigh, Etc., Etc.
CRUSHING PLANTS: No. 65 Diamond No. 22 Pioneer 8x24, 1630 Good Roads, 9x40 Austin-Western, 9x36 C.R.

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Barges, Bins, Buckets, Boilers, Cableways, Cars, Compressors, Conveyors, Cranes, Dryer, Derricks, Draglines, Drag Scrapers, Dredges, Drills, Engines, Elevators, Excavators, Generators, Hoists, Kilns, Locomotives, Loaders, Motors, Pipe, Pumps, Rail, Scales, Screens, Slacklines, Shovels, Tanks, Trucks, Tractors, Etc., in many sizes, types and makes at low prices. (I have equipment at many points in the United States and Canada. What you need may be near your plant.)

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BINS

1—All steel twelve hundred ton, three compartment with scales and batchers.

BELT CONVEYORS

1—24x60 and 1—24x75 all steel with motors and belt.

CARS

10—12 yd. capacity all steel 36″ gauge air dump cars, air brakes with cast steel side truck frames.
2—4 yd. 36″ gauge Koppel all steel rocker dump cars.

GYRATORY CRUSHERS

All standard makes, Size No. 4 openings 8x30 up to Size 21 openings 42x134″.

JAW CRUSHERS

8x16 up to and including 48x60.

CRUSHER SPECIAL

1—Traylor 42″ x 48″ capacity per hour 260 tons 8″ or 118 tons to 5″ manganese fitted perfect condition, immediate delivery.

SINGLE ROLL CRUSHERS

1—18x24 and 1—21x42 all steel.

CRUSHING PLANT

1—Complete crushing plant with 24x36 crusher 3 ft. finishing crusher, vibrator screens, conveyors, steel bins and all electrical equipment.

CRUSHING ROLLS

1—Set Buchanan 14″ face, 30″ diameter.
1—Set Buchanan all steel, 36″ face, 48″ diameter.
1—Set Sturtevant 10″ face, 21″ diameter.

CRUSHER SPECIALS

1—Symons 2′ and 1—4′ cone crushers, coarse bowl.
1—Kennedy Model 25 reduction crusher.
1—Traylor 3′ finishing crusher.
1—15x24 Reliance crusher.
1—Universal 16″x30″ roll crusher.
1—Telsmith 15x24.
1—Buchanan and 1 Farrell 13x30.
3—Traylor 12″ and 16″ gyratory.

DRYERS, KILNS AND COOLERS

1—8′6″x86′ double shell, Ruggles Cole.
1—7′x55′ Allis Chalmers heavy duty single shell.
1—5′x60′ Traylor single shell.
2—6′x40′ Allis Chalmers.
2—8′x110′ kilns.
2—6′x50′ dryers.
2—6′x50′ coolers.

HOISTS, MINE TYPE

1—Single drum 78″ dia., 72″ face, with 350 H.P. motor, 2200 volt, complete with all equipment.
1—6′ dia. by 72″ face with 150 H.P. 2200 volt AC motor and controllers.
1—80″ dia. x 60″ face with 200 H.P. motor, 2200 volt with all control equipment.
1—Single drum 60″ dia., 36″ face, 150 H.P. motor.
1—Single drum 60″ face, 300 H.P. motor.

HOIST AND DERRICK

1—3 drum electric hoist with swinger, with steel stiff leg derrick, 75′ boom, with or without one yd. clamshell bucket.

LOCOMOTIVES, STEAM

1—Baldwin switcher with tender 2-6-0 cylinders 20x26 weight on drivers 55 tons.
1—Porter 50 ton, 4 wheel, std. gauge saddle tank, air brakes.
2—Vulcan 32 ton, 4 wheel, std. gauge saddle tank, air brakes.
1—Vulcan 21 ton, steam, air brakes, std. gauge.

LOCOMOTIVES, GAS

1—Plymouth and 1 Vulcan 8 ton, std. gauge.
2—Plymouth 20 ton and 24 ton, std. gauge.

LOCOMOTIVES, NARROW GAUGE

2—45 ton Heisler geared locomotives, 36″ gauge.
8—Plymouth and Whitcomb 4, 7, 8, and 14 ton, 24″ and 36″ gauge.

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1—Ball mill, 4′ dia., 4′ long.
2—Raymond large capacity pulverizers with integral exhaust and cyclone collectors.
1—Sturtevant No. 0 Ring Roll Mill.
2—Bradley 4′ with motors.
7—5′6″x22′ tube mills, steel lined.

FAN

1—Sturtevant Design 4 size 85 turbo fan with or without 50 H.P. turbine. Turbine—Westinghouse 50 H.P. steam, 1500 RPM for use with above fan.

SCREENS

8—Single, double and triple deck vibrating screens with motors, Robbins, Niagara and Telsmith.
6—Niagara and Robbins 4x10 and 4x13 double and triple deck with 7½ and 10 H.P. motors.
1—Kennedy 3x6 double deck.
2—Allis Chalmers 3x8.

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1—P&H Model 900 diesel, 40′ boom, 22′ sticks, 200 H.P. Fairbanks Morse 5 cylinder diesel, Used less than 4000 hours with 3 yd. rock or 3½ yd. earth dipper. For sale or rent. Located Cooley, Minnesota.
1—1¼ yd.; 1—1½ yd.; and 1—1¾ yd. steam. All in excellent condition.

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2—Jaeger 3 yd. with power take off on Mack trucks.

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VIBRATING SCREENS

1-deck 2'x8', 3'x5', 4'x7', 4'x8'.
2-deck 3'x6', 4'x6', 4'x7', 4'x8'.
Hummer 1 & 2-deck 3'x5', 4x5, 4x7.
15-cycle Hummer Screen Generators.
5'x20' Revolving type on trunnion.

CRUSHERS AND MILLS

Jaw 4x10", 7x10", 9x15", 18x12", 20x10", 24x12", 36x15" and 36x24".
Gyratory No. 3 Gates, No. 37 Kennedy & 8" Traylor.
Mills Harosh No. 1½ Hammermill, Marcy Roller Mill 1'x2', Garfield 54x20".
Jeffrey 24"x24" 2-roll crusher.

BELT CONVEYORS

42—56" Head & Tail Pulley Asmblys.
450—30" & 36" Trough Belt Idlers.
Conveyor and Friction Belt.
Fairfield Plate Feeder, 24" x 6'.
Belt Feeder, 54" x 20'.

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400' of 20"-w. 8-ply Belt.
20 Tons Selected Chain, Buckets, etc.
Complete Equipment for Open & Encased Continuous Vert. & Inclined types: 5"x35', 6"x32', 12"x35', 14"x32', 15"x50', 16"x60', 18"x40', 20"x40'.

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3"x2½" A-C. 250-gals. 150', 20-hp.
4"x4" Rumsey 400-gals. 80' head.
4"x3" Le Courtenay 3-stage 400-gals. 380'.
8"x6" Goulds with 22-hp. Motor.
Goulds 3-L Centrif. 500-gals. 150'.

LOCOMOTIVES, PORTABLE TRACK AND CARS

36"-g. 4 & 8-ton Gas Locomotives.
36"-g. Side Dump Cars, 2 & 3-yds.
36"-g. Battery Locomotives, 2½-ton.
24"-g. Track, Flat and Dump Cars.

MISCELLANEOUS

40-hp. Thomas Hoist, 2-drum.
15-hp. Lidgerwood Gas Hoist, 1-drum.
15 & 40-hp. Electric Motors.
15-hp. Speed Reducers, 15:1 & 78:1.
800-hp. Patterson Feedwater Heater.
150-hp. Vertical Boiler, 125-lbs.
50-hp. Locomotive Boiler, 200-lbs.
Clamshell Buckets ½, ¾, 1¼, 1½-yd.
Dorr Classifier, Small size.

G. A. UNVERZAGT, 136 Colt St., Irvington, N.J.

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4 YD. SHOVEL

120B Bucyrus Erie 4 yd. Electric shovel & 100 ft. Boom Dragline.

DIESEL DRAGLINES

2 Yd. Lima Model 750, 60 ft. Boom.
2½ Yd. Bucyrus 48B, 80 ft. Boom.
3 Yd. P. & H. Model 900, 97 ft. Boom.
3—3W Monighan 90 ft. Boom.
4W Monighan, 100 ft. Boom.
5W Monighan, 125 ft. Boom.
6W Monighan, 160 ft. Boom.

DIESEL LOCOMOTIVES

2—43 ton G.E. Std. Ga. Diesel Electric Locomotives.
3—6 ton Davenport Std. Ga. Diesel Electric.

TIDEWATER EQUIPMENT & MCHY. CORP.

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FOR RENT OR SALE

All Sizes—With or Without Trucks
27E Multi-Foote Paver
Road Forms—Finishers

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7—2 yd. Separate Engine Drive Truck Mixers, Mounted on Fords and Chevrolet, — Good Running Condition, Now Working, Immediate Delivery —

PRICE EACH $1500.00

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CORONA, N. Y.
Phone: NEwtown 9-7777

FOR SALE:

¾ yd. Brownhoist combination crane and shovel.
2—Telsmith Ajax revolving screens.
1—3x6 double deck Simplicity vibrating screen.

WANTED TO BUY:

1—Double sand screw.

COOGAN GRAVEL COMPANY
805-b LEHMANN BUILDING
PEORIA, ILLINOIS

CONCRETE EQUIPMENT

Ready-Mix Blaw Knox concrete plant, complete, large size, splendid condition, unusual opportunity, specifications furnished.
Blaw Knox complete central mixing plant.
Heltzel bin, 225 ton, 4 compts., weigh batcher.
Blaw Knox complete central mixing plant.
Butler 100 yd. 3 compt. bin, weigh batcher.
Steel bin, 75 yds., single compt., sand and gravel.
200 ton rock storage bin, steel, heavy construction.
Fuller Kinyon bulk cement unloader, portable.
Fuller C40 rotary air compressor, electric.
Ransome Dual drum paver 27E.
Ransome 28-S 1 yd. stationary mixer, elec.
Barber Greene Model 62 bucket loader, cats.

SPECIALS!!!

4 ft. Symons Cone Crusher, complete.
I.R. Type D Wagon Drill with X71 Drill.
I.R. Type FM Wagon Drill with X71 Drill.
100 HP vertical boiler, new 1940, complete.
20,000 gls. oil tanks with heating coils.
I. R. Air Compressor, 310 cu. ft., gas, portable.
I.R. Air Comp. 315 cu. ft., 2 stage, gas, port.
Sullivan Air Comp. 110 cu. ft., gas, port.

BUCKETS—STONE SKIPS

22—Steel stone skips, 2 to 3 yds.
1½ yd. heavy duty Blaw Knox digging bucket.
1¼ yd. heavy duty Blaw Knox, digging, clamshell
1½ yd. Hayward rehandling clamshell.
¾ yd. Haiss rehandling, clamshell.
1 yd. Hayward orange peel, 4 leaf.
¾ yd. Hayward orange peel, 3 leaf.

SHOVELS—CRANES

Bucyrus Erie Model 1030 electric tunnel shovel.
2—Marion Diesel shovels, 1—⅝ yd. cap.
2—Marion Steam shovels, 1½ yd capacity.
No. 50-B Bucyrus Erie electric shovel, 2 yds.
Northwest Model 105 ¾ yd. gas crane.
Bucyrus Erie Model 41B steam shovel, 1¼ yd.
Marion Steam Shovel, Model 32.
Ind. Brownhoist loco. crane, electric, 20 tons.
Browning loco crane, 25 tons, steam.

LOCOMOTIVES—CARS

2—Vulcan 6 ton, gas, 36" gauge.
2—Whitcomb 4½ ton, gas, standard gauge.
8—3 yd. V type 36" ga. side dump cars.

CRUSHERS

Gyratory crushers: K.V.S. 20, 27-S, 49; Telsmith 32, 8A, 8B; Traylor 8"; McCully 18", 8", 6".
Jaw: 6x12, 9x16, 10x20, 12x26, 13x30, 15x30, 16x32, 36x48, 48x69.
Symons 4' cone crusher, complete.

RICHARD P. WALSH CO.
30 CHURCH STREET NEW YORK

Bucyrus 50B steam shovel, 1¾ yd., power boom hoist, on cats., being overhauled.
Bucyrus 50B electric shovels (2); also 80B steam shovel, 2¼-yd., 50' boom, on cats.
Browning locomotive crane, 20-ton, steam.
G.E.-Cummins 100 ton Diesel-electric locomotive.
Milwaukee 12-ton gas locomotive, std. ga., MCB couplers; also others, 20 to 7 tons, 36"—30"—24" gauge.
Bucyrus-Monighan Walker draglines (2), 3-yd., Diesel & electric, 70' & 80' booms.
Bucyrus 52-B Diesel dragline-shovel.
Brownhoist portal gantry cranes (2), electric.
Clyde 10-ton guy derrick, 70' bm., electric.
Bucyrus-Erie ⅝ yd. gas comb. shovel-crane.
Allis-Chalmers No. 12-K gyratory crusher, 27"-33".
Northwest 105 gas combination crane-shovel
Allis Chalmers 54" x 24" roll crusher.
National Brake 550' compressor, electric.

H. Y. SMITH CO.
828 N. B'WAY, MILWAUKEE, WIS.

FOR SALE

1—40' Stone or Gravel Washer, 50 ton capacity $300.00
1—8" Manganese Steel Sand Pump..... 450.00
1—5" Water Pump & 35 H.P. Motor & Starter 250.00
1—4" Water Pump; no motor..... 100.00
100'—3 Conductor flexible armored El cable 100.00

BROADWAY CONSTRUCTION CO.
14005 Broadway, Cleveland, Ohio

EXCELLENT VALUES

No. 7 Newhouse Gyratory—60 HP Motor.
No. 600 P & H one yard Gas Crawler Crane.
40 to 1000 HP Diesel Engines, various makes.
1¼ and 1½ yd. Northwest—Cranes—Draglines.
567' Ingersoll Rand Motor Drive Compressor.
20 to 50 ton 8 wheel Locomotive Cranes.

MISSISSIPPI VALLEY EQUIPMENT CO.
515 Locust St. St. Louis, Mo.
Hoists, Derricks, Locomotives, Cars, Boilers, Compressors, Engines

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FOR SALE

No. 1 Williams Universal Fine Grinding Hammer Mill, bought new, used only 1300 hours, including motor and starter, suction fan equipment and 2-way sacker. Priced right. Address Perfection Clay Co., Box 2603, Tulsa, Okla.

FOR SALE

Miles Tamper and Face Down Block Machine with all attachments and pallets; also 850 45% cast iron Miles Stripper pallets.

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Battle Creek, Michigan

WIRE ROPE
USED — GRADED
STANDARD BRANDS

We carry a large stock of 1" and 1¼ " Dia. Imp. Plow Steel Wire Rope with Hemp & IWRC.
Lengths from 500' to 1500'.
"Excellent for Shovels, Draglines & Hoisting."
All Rope in A-1 Condition
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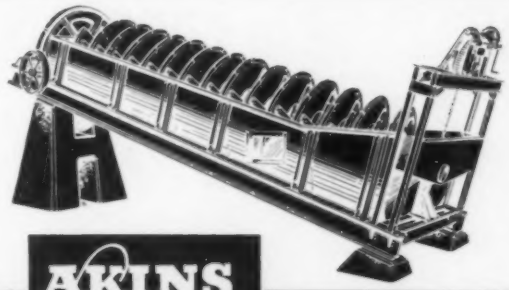

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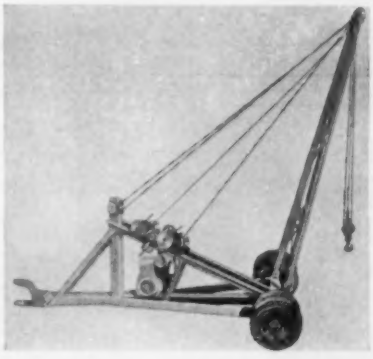

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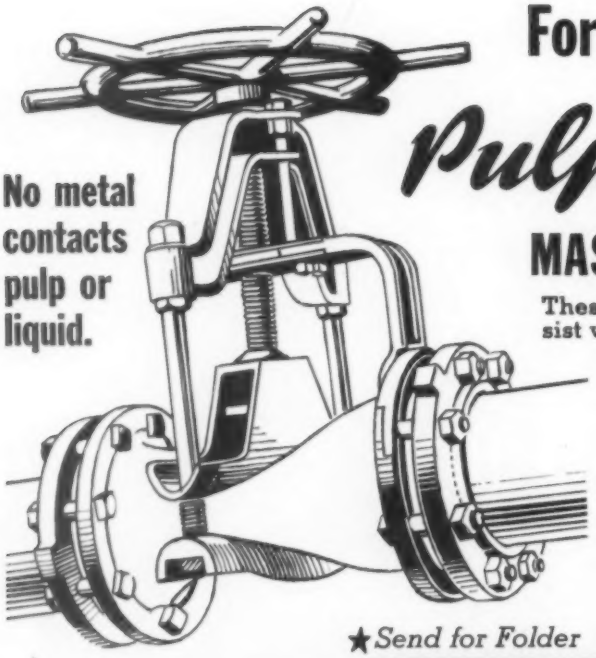

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